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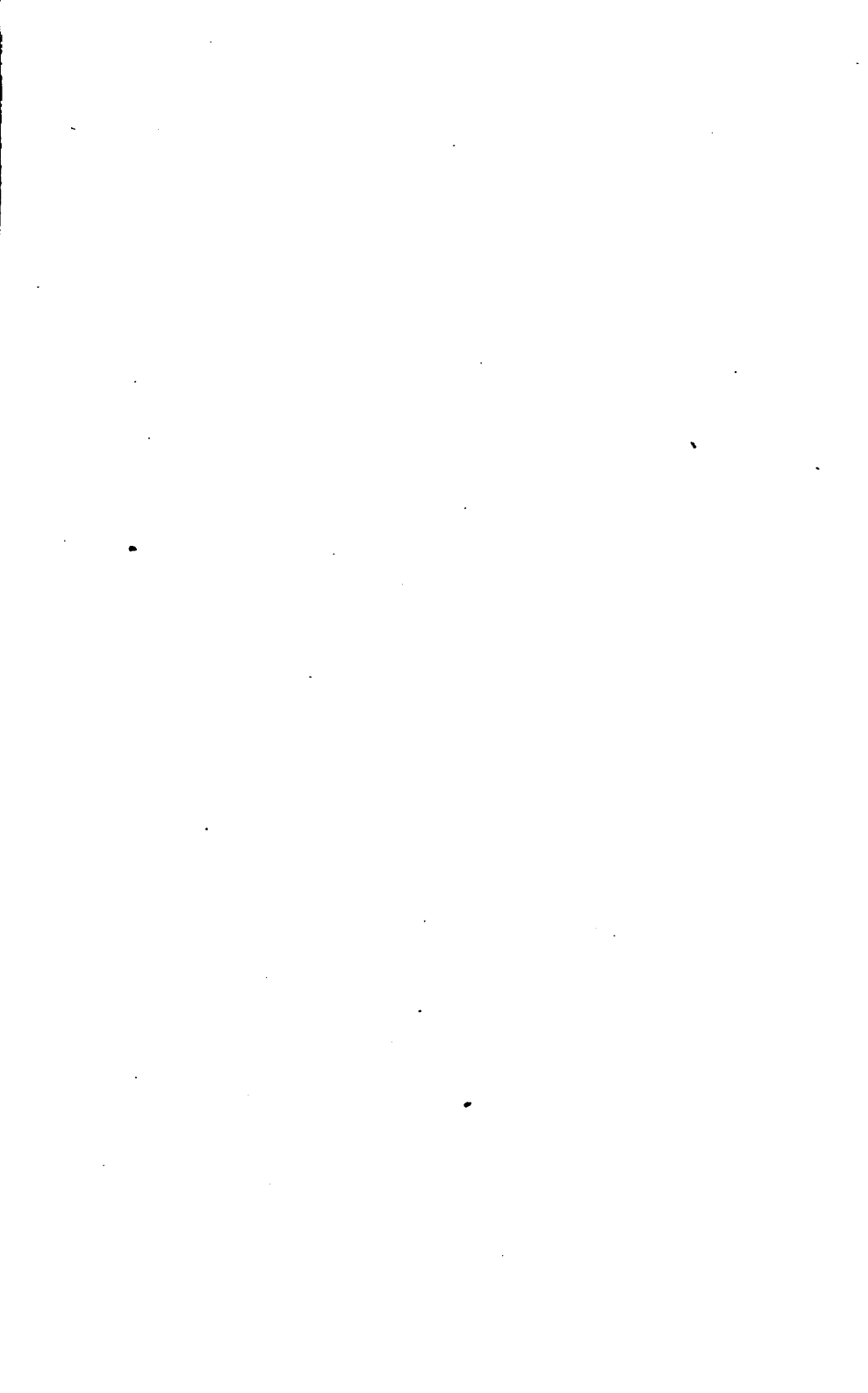
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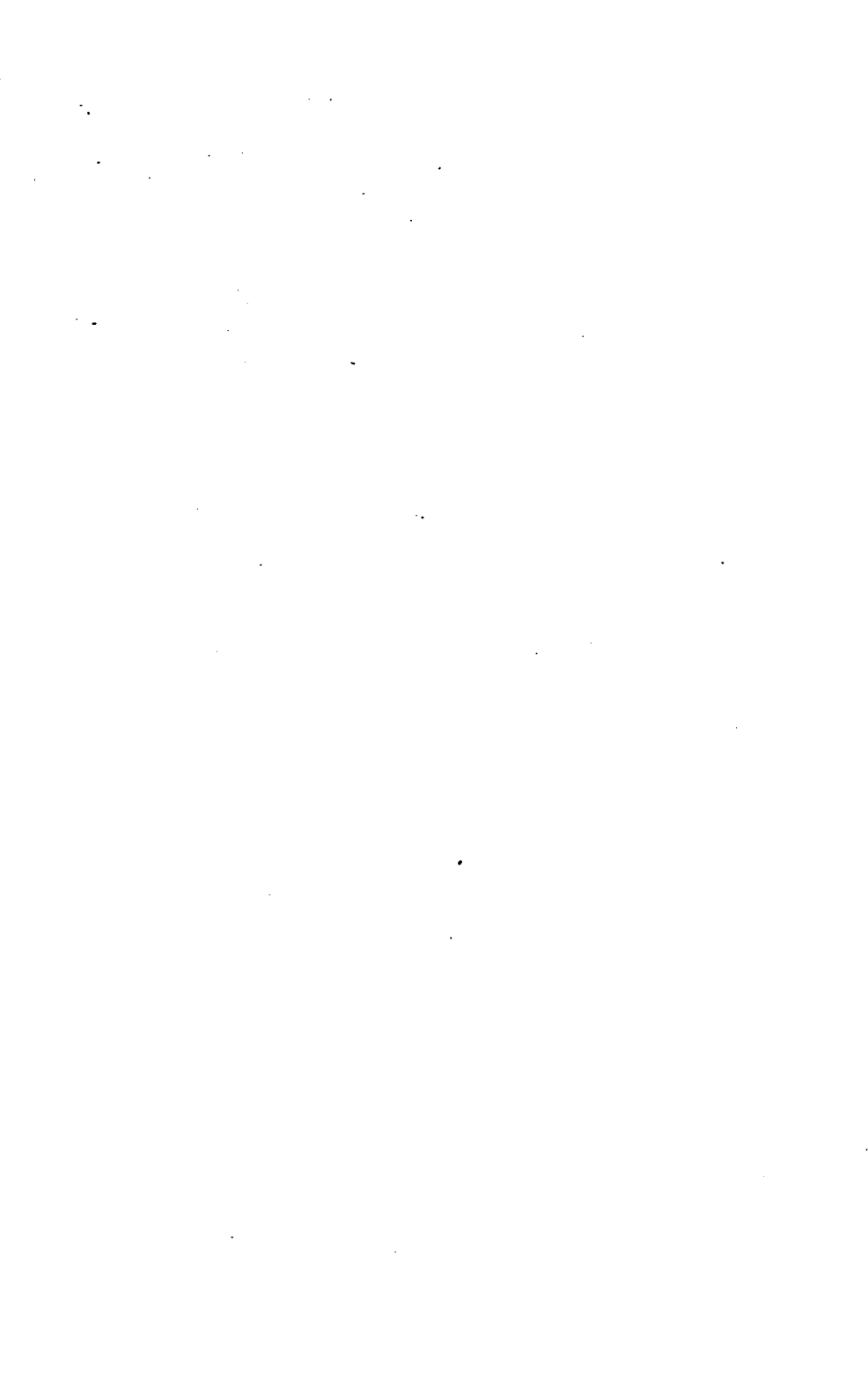
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THE
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MONTHLY MAGAZINE

CONDUCTED BY

C. G. BARRETT,

J. W. DOUGLAS,

R. M'ACHLAN, F.R.S.

E. C. RYE,

E. SAUND,

H. T. STAL

VOL. ~~XX~~ I.

"L'auteur doit s'efforcer de rester dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus amicale et la plus courtoise."—L'Éditeur.

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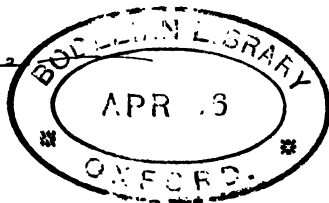
E. SAUNDERS, F.L.S.

H. T. STANTON, F.R.S.

VOL. XXI.

"Nature never did betray
The heart that loved her: 'tis her privilege,
Through all the years of this our life, to lead
From joy to joy."

Wordsworth.



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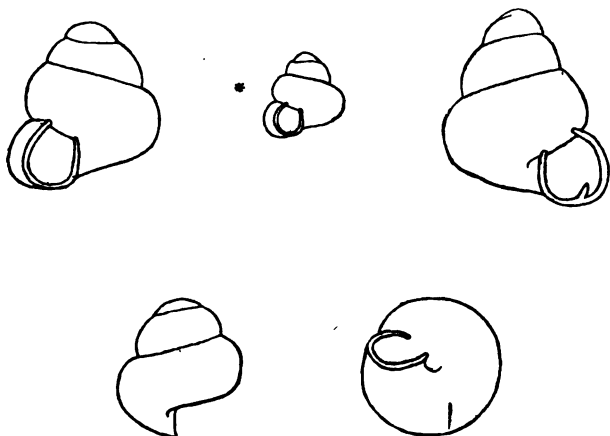
VOLUME XXI.

ON AN EXTRAORDINARY HELICIFORM LEPIDOPTEROUS LARVA-
CASE FROM EAST AFRICA.

BY ROBERT McLACHLAN, F.R.S., &c.

At the Meeting of the Entomological Society of London, held on February 7th, 1877, I exhibited "an extraordinary case of a Lepidopterous larva from Zanzibar, sent by Dr. Kirk, who had found it on *Mimosa*. It was probably allied to *Psyche* and *Oiketicus*, and was in the form of a *flattened Helix*, half-an-inch in diameter, formed apparently of a kind of *papier-maché*, with a smooth whitish outside coating." (*Cf.* Proc. Ent. Soc., 1877, p. ii; Ent. Mo. Mag., xiii, p. 240.) Wishing now to have a figure made from that case, I am unable to find it.

Very recently my friend Mr. Bates gave me nine cases of a somewhat similar character, found by Dr. Baxter at Mpwaipwa, East Africa, about 100 miles inland from Zanzibar. Dr. Baxter's attention had



been drawn to them by seeing them carried about by the larvæ that formed them. But these, instead of being *flattened*, are *high*, and resemble shells of the

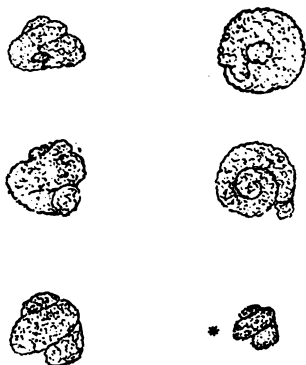
genus *Cyclostoma* or *Paludina* in a wonderful degree. They vary from 9 to 13 mm. in diameter at the lowest whorl, by from 9 to 15 mm. in height. Each forms about $3\frac{1}{2}$ whorls, the sutures indicating which are not very sharp, owing to a coating to be presently alluded to. In six of them the spiral turns from left to right, in three from right to left. The apex is blunt and depressed; the mouth nearly

circular, and there is a deep open umbilicus; all have the mouth perfectly open. Upon making a vertical section, it is seen that the whorls are perfectly separated. They are of extreme lightness, yet the walls are nearly $1\frac{1}{2}$ mm. thick. This lightness is owing to the texture, which, although perfectly hard and firm, is somewhat fibrous. The material is undoubtedly vegetable matter, but whether masticated specially for the purpose, or excrementitious, is uncertain to me. I rather incline to the latter idea, because there is no opening through which the excrement could be ejected, other than the mouth of the case. The exterior has a thin coating of (apparently) silk of a pale drab colour, which renders the cases very smooth, but not glossy; but the older cases are blackened by a coating of what is probably adventitious matter. I am unable to say on what plant they were found, but one of them is attached (at a point indicated in the top right-hand figure) to a fragment of a plant, which may possibly be *Mimosa*.

It is well known that exotic species of *Psychidæ* are given to fabricating cases of extraordinary forms, but, of all that I have seen, these are the most extraordinary, on account of their perfect similarity to shells.

The cases of the South European *Psyche* (*Cochloplanes*) *helix*,

are tolerably familiar to most entomologists, but their resemblance to shells is less marked, on account of the *débris* with which their exterior is covered; moreover, the texture is slight and yielding, and at, or near, the apex there is an opening through which the excrement can be ejected. They bear more external resemblance to the now well-known cases of the Trichopterous genus *Helicopsyche*. For the sake of comparison, I give here figures of the cases of *Psyche helix*.



The figures are enlarged to two diameters, but the smallest figure on each block (indicated by *) shows the natural size.

With the above-described cases collected by Dr. Baxter are others formed of twigs, arranged longitudinally or transversely (not uncommon), and one, 47 mm. long, mimicking a shell of the genus *Dentalium*, but such, I think, have already been noticed and described.

Lewisham, London :

May, 1884.

DESCRIPTION OF THE LARVA OF *DEPRESSARIA BADIELLA*.

BY THE LATE WILLIAM BUCKLER.*

On the 28th of May, 1882, I received in a quill three little larvæ found the previous morning by Mr. W. H. B. Fletcher on Freshwater Down, Isle of Wight, living under the leaves of *Hypochæris radicata*, one of the *Compositæ*, of which three little plants accompanied the larvæ. At this time they were nearly 5 mm. long, cylindrical, of a cinnamon-brown colour, with shining darker dots, a blackish-brown frontal plate and anal plate. By the second of June one of these had added 1 mm. to its length and seemed to have moulted, the cinnamon-brown being rather darker than before, the tubercular dots on the back were nearly in a line and darker brown than the body, the plate on the second segment glossy black, the head darker brown than the body, the anal plate shining black, and a transverse narrow black plate on the dorsal portion of the front of the anal segment.

These larvæ live in fine white silken webs between two leaves, or under one leaf, which is spun fast upon some firm substance; they live in this way concealed, though by their feeding on the lower cuticle of the leaf a transparent blotch becomes visible, and they push out from their dwellings little heaps of blackish excrement.

By the 7th of June the most advanced had reached the length of 8 mm.; on the 16th I figured one of them, but minus the blackish tubercular dots, which are at this stage more trapezoidally arranged on the back; a black shield was outside the anal legs.

On the 11th of July I received more of these larvæ from Mr. Fletcher, one of them grown to be 20 mm. long; it was of a dark red colour, greenish when the segmental divisions were stretched, the dots black, ringed with greenish, the black plate on the second segment divided in the centre, and with paler yellowish margin of skin in front, the anal plate black and a small black transverse oblong on the front part of that segment. The head dark reddish-brown, anterior legs black; all the dark red skin dull, the greenish divisions glistening a little, the black dots, head and plates glossy, a fine hair arising from each dot.

These five later larvæ were put with three vigorous growing plants on the 16th, and by the 23rd every part of the plants had been devoured, and for want of food the larvæ had devoured one another, only two escaping the massacre, one of these had spun up in an earth-covered

* This description is given by the kind permission of the Rev. T. Wiltshire, the Secretary of the Ray Society—that Society being now in possession of Mr. Buckler's valuable notes, as well as his magnificent collection of drawings of larvæ, which are to be published by the Society.

cocoon, long and narrow, the other was still alive in the larva state, I tried to get it to feed up on Hawkweed, but in the course of eight days it died.

On the 4th of July, 1883, I again received four of these larvæ from Mr. Fletcher, viz. : one 9 mm. long, one $12\frac{1}{2}$ mm. long, very dark red on a dingy green ground, which is seen at the segmental divisions, and in the fine pale rings round the black dots ; another was 19 mm. long slightly tapering from the third segment to the head, tapering again a little on the twelfth and considerably on the thirteenth segment ; the head, the second and anal segments with their plates just as described above from the specimens I received in 1882, but the colouring of the body of a deepish sober green, with a darker dorsal pulsating line, the blackish-brown dots appearing very small as their circumscribing pale rings have much faded, the front plate was deep olive outlined with blackish-brown ; one entered the earth on the 4th of July, another I watched burrow into the earth on the 5th.

Mr. Fletcher tells me "that when young the larva is found *on* the under-side of leaves of the food-plant. When it is bigger it makes a tunnel or gallery under the plant on the soil, so that when the rosette of leaves is removed the larva is left behind. I think that this tunnel reaches into the turf beyond the radius of the leaves, as many a little sod cut round the plant comes away without the larva. I found one pupa of odd shape in this gallery."

"When full grown the larva often eats out the heart of the plant and bores down far enough into the root to kill it. While the larva is feeding under the leaves its ravages are conspicuous enough, even while small, as it makes brown marks, which are visible on the upper-side of the plant."

In confinement, without earth with the plants, its gallery of silk becomes covered with accumulations of "frass."

Often when the larva attains the last moult we see the dark dingy olive-green variety, with belly rather lighter than the back, the one colour blending with the other, the spiracles round and black, are very minute and situated nearly close below the single row of dots on the side : the pale yellowish margin of skin next the head, in front of the plate on the 2nd segment, is a good and constant character.

The pupa is generally enclosed in a cocoon, covered with grains of earth, of oval shape, 19 mm. in length, rather loosely held together with but very little silk in the lining of brownish-grey colour, the interior of cylindrical form and smooth, $12\frac{1}{2}$ mm. in length, so that the pupa (which is only 10 to 11 mm. long) has plenty of room ; it is rather

slender in the ♂, stouter in the ♀, it has nothing remarkable in its form save that beyond the wing-covers, the abdomen tapers gradually in the ♂, more obtusely in the ♀, and the moveable rings are deeply cut, the tip of the abdomen is surrounded with about twelve exceedingly minute curly-tipped bristles, which take a firm hold of the silk lining.

One pupated openly on the surface of the earth, attaching its tail to a leaf of the plant, and this enabled me to see that for some time its colour was of a light greenish-ochreous, afterwards it was light brownish, and still later it turned very dark brown; it was glossy from first to last.

The moths were bred on August 11th, 12th, 17th, and September 13th, 1883.

Notes on Depressaria badiella.—I am indebted to Mr. Stainton for the chance of making a few remarks on Mr. Buckler's life-history of *Depressaria badiella*. And first as to the circumstances which led him to depart from his usual rule of not describing or figuring the larvæ of *Tineina*. I had taken *Botys flavalis* freely at Freshwater in August, 1881. Mr. Buckler was very anxious to have the larvæ of this species, and so, being equally keen to find it myself, I ran over to Freshwater on May 27th, 1882. The only result of a close search was the finding of a few small larvæ of *Dep. badiella*. These I felt sure were the right larvæ. Neither Mr. Buckler nor I bred any moths from this lot; but, on July 3rd, 1883, I was able to find a pupa and several large larvæ, so that we were both successful in rearing some moths. From the first Mr. Buckler told me that the larvæ were not *Pyrales*, but *Tortrices* or *Tineina*. I think there could hardly be a better illustration of his kindness and great unwillingness to throw cold water on the hopes of a correspondent, than is shown in the fact that, in spite of his knowledge that these larvæ did not come within the scope of his studies, he, on two occasions, took charge of them, beside figuring and describing them with his usual minute care.

Next, two small points in the life-history seem to require notice. Mr. Buckler alludes to the larvæ making a transparent blotch, while I find it by the dark brown marks, on the leaf of the food-plant. Mr. Buckler, no doubt, refers to the immediate result of the feeding of the larva, I to the more distant, when the milky juice of the plant has produced a brown stain on the wounded leaf. The "odd shape" of the pupa mentioned in the extract from my letter has reference to the difference between the flattened pupa of a *Depressaria* and the expected cylindrical one of a *Botys*.—W. H. B. FLETCHER, 6, The Steyne, Worthing: May 14th, 1884.

NOTES ON THE DISCOVERY, BY MR. W. H. B. FLETCHER, OF THE LARVA OF *DEPRESSARIA BADIELLA*.

BY H. T. STANTON, F.R.S.

Last September I received from the late Mr. William Buckler a *Depressaria*, on which he wished my opinion.

He had received, from Mr. W. H. B. Fletcher, some larvæ which

were supposed to be those of *Botys flavalis*. "My disappointment" wrote Mr. Buckler "was very great, when I very soon saw there was no hope of their being *flavalis*, and I thought I had got hold of some troublesome *Tortrix*." The "troublesome *Tortrix*," however, turned out a *Depressaria*, and one which had not previously been bred. The larvæ in question had been found by Mr. Fletcher on Freshwater Down, Isle of Wight, feeding on the leaves of *Hypochæris radicata*.

The sight of the single specimen which first reached me did not enable me to determine the species with certainty. I wrote, however, to Mr. Buckler on the 23rd September, 1883, as follows:—

"I believe your *Depressaria* is one that has not been bred before, and, certainly, no larva of that genus was known to feed on *Hypochæris*, so at any rate there is a discovery, which may help to console you for your disappointment. Indeed, if every one of your *disappointments* could result in similar *discoveries*, I should be malicious enough to wish you many of them! Before positively determining the species, I should like to see your other specimens, especially as you say they are not all *exactly* alike."

A week later, I received from Mr. Buckler his other three bred specimens, and I must confess that my first impression was that they were some unnamed species, which, though closely allied to *badiella*, differed from it in the shape of the anterior wings.

Two years previously Mr. Sydney Webb had sent me some specimens of a *Depressaria* he had beaten from thatch at Folkestone, which I had then thought as probably distinct from *badiella*, and it occurred to me that possibly the insect now bred by Mr. Buckler might be the solution of Mr. Webb's problematical species. Moreover, I gathered from Mr. Buckler's letters that Mr. Fletcher had also succeeded in breeding several specimens of the same insect, hence, I wrote to Mr. Buckler on the 30th September, 1883, "before describing the insect you have bred, I should like to see again Mr. Webb's specimens, and also any that Mr. Fletcher may have bred."

Mr. Fletcher being then from home I did not write to him at once, and being much occupied with other matters, Christmas was already past before I wrote to Mr. Sydney Webb and to Mr. W. H. B. Fletcher for their specimens of the *badiella*-like *Depressaria*. They came promptly enough, but, alas, before I could get them examined Mr. Buckler was no more!

Ultimately I came to the conclusion that the specimens were really referable to *badiella*, of which we had previously only known captured specimens, which were more or less worn.

The darker ground-colour of Mr. Buckler's specimens, and the different shape of the hind margin of the anterior wings arising, probably, from the more complete cilia, seem to be the natural results of the finer condition of bred specimens.

Badiella, at the best of times, is always an obscure, dingy insect, and, though of wide distribution, has rarely been met with in any plenty, and as mentioned by Snellen in his "Vlinders van Nederland" (the latest systematic work on European *Lepidoptera*), the larva was quite unknown; hence, its occurrence on one of the *Compositæ* is of great interest.

Mountsfield, Lewisham :

May 13th, 1884.

NOTES ON *LEPIDOPTERA* OBSERVED DURING AN ALPINE TOUR IN 1883.

BY GEORGE T. BAKER.

Last summer, in company with my friend Dr. Jordan, my holiday was spent between Aosta, Chamouny, and Geneva. Our route from the ancient city of Aosta, with its interesting old remnants of Roman architecture, lay up the valley of the Buttier, and over the Great St. Bernard Pass, where, of course, we stayed to see the famous monastery, from there, following the course of the Dranse, we descended to Martigny. This valley (of the Dranse) is certainly very bleak and dreary, and the insect life therein not to be compared in richness with that of the Visp and Saas valleys, neither is its flora; to a certain extent, however, this may have been owing to the extreme lateness of the season. From Martigny we walked over the Col de Forclaz, and Tête Noire to Chaumouny, this was our only wet day; after remaining there for a few days we walked to Sallanches, took the diligence from thence to Geneva, where we stayed for about three days. It was then time to turn our faces homewards, but on our way we stopped for a day at Dole, in the extreme west of the Jura district, where we were by no means idle. We started on the 14th of June, and were much favoured in the weather, from a tourist's point of view, not so, however, from an Entomological one, as our captures were by no means up to the average, especially among the *Rhopalocera*, but, as remarked before, this may have been due to the great backwardness of the season, which may be realized when I say that on the 21st of June, the whole of the Great St. Bernard Pass was entirely covered with snow, and we were

thus prevented from taking any of the high Alpine insects. The following is a list of our captures, in which I follow the order of Staudinger's catalogue.

Papilio Podalirius, Dranse valley, near Orsières.

Parnassius Apollo, Dranse and Buttier valleys. 1 also reared one at home about the end of July, the larvæ were not uncommon.

Aporia cratægi, common everywhere.

Pieris napi, v. *bryoniæ*, summit of the Col de Forclaz: *Daplidice*, Aosta.

Anthocharis Belia, Buttier valley: *cardamines*, Arve valley.

Leucophasia sinapis, Dranse valley, and Gt. Salève near Geneva.

Colias Hyale, Aosta, Dranse valley, and Gt. Salève.

Thecla rubi, Buttier valley.

Polymnatus Hippothoe with its var. *Eurybia*, Arve valley near Chamouny: *Aleiphron*, Dranse valley near Orsières: *phlæas*, Buttier valley.

Lycæna Ægon, Dranse valley below Orsières, abundant: *Argus*, Dranse and Buttier valleys: *Baton*, Buttier valley: *Astrarche* and v. *Allous*, Dranse valley below St. Pierre: *Icarus* and v. *Icarinus*, Buttier, Dranse and Arve valleys, we also took in the Buttier valley a beautiful variety with the colouring almost that of *Belargus*: *Belargus*, Buttier valley: *Corydon* and *Hylas*, Dranse valley below Orsières: *Sebrus*, Dranse valley: *minima*, common everywhere: *semiargus*, Buttier and Dranse valleys, also one on the summit of the Col de Forclaz: *Alcon*, Dole.

Nemeobius Lucina, Gt. Salève.

Vanessa urticæ, *Atalanta*, and *cardui*, Buttier and Dranse valleys.

Melitæa Cynthia, larvæ reared from the Great St. Bernard: *Cinxia*, and *Phæbè*, Dranse and Buttier valleys: *Didyma*, Dranse valley: *Dictynna*, Dranse and Arve valleys: *Athalia*, Dranse and Arve valleys. Where are we to draw the line between this species and dark specimens of *Aurelia*?

Argynnis Euphrosyne, Col de Forclaz, Chamouny, and Arve valley: *Latonia*, Buttier and Dranse valleys.

Melanargia Galathea, St. Gervais (Arve valley), and Gt. Salève.

Erebia Ceto, Buttier and Dranse valleys: *Stygne*, Dranse valley, near Orsières, and Arve valley, near Chamouny: *Evias*, St. Remy (Piedmont), abundant.

Eneis Aëlla, St. Remy.

Pararge Mæra, Dranse and Arve valleys: *Hiera*, Arve valley: *Megara*, Aosta, and Gt Salève: *Egeria*, Gt. Salève: *Achine*, Dole, plentiful in the pine woods.

Epinephile Janira, common everywhere: *Hyperanthus*, common everywhere.

Cænomympa Arcania, Gt. Salève and Dole: *Pamphilus*, everywhere.

Syrichthus carthami, *cacaliæ*, and *andromedæ*, Dranse valley below Orsières: *malvæ*, Great St. Bernard. Chamouny: *Sao*, Buttier and Dranse valleys.

Nisoniades Tages, Dranse and Buttier valleys, and Chamouny.

Hesperia Thaumæs, everywhere: *lineola*, Arve valley: *Sylvanus*, common in all parts.

Carterocephala Palæmon, Orsières and Chamouny.

Macroglossa stellatarum, Dranse and Arve valleys.

Zygæna scabiosa, Arve valley: *achilleæ*, Buttier valley: *exulans*, reared from the Great St. Bernard, where the larvæ were very abundant indeed: *trifolii* ab. *orobi* in which the two median spots are not united as is the case in *trifolii* proper. The ground-colour of two specimens from the Buttier valley is steel-blue, with the black border of the hind-wings broader than in typical German or British specimens: *v. dubia*, Staudinger describes this in his catalogue as follows:—

Zygæna v. dubia, "*v. major*, al. ant. macul. 5 vel. 6, al. post. latius nigris" of this we took a large number in the Buttier valley, in none of which are the central or basal spots confluent. The series is so interesting that I will describe them in detail.

- a. Fore-wings steel-blue with the median spots red instead of crimson, and narrowly separated, hind-wings also red with a broad black border, spots on under-side all disconnected.
- b. Fore-wings bluish-bronze, with the spots crimson, smaller than usual, the median ones being more widely separated, hind-wings crimson with a broader black border.
- c. Fore-wings bluish-green with all the crimson-red spots very small, the median ones being very oblique, and still more widely separated, and the hind-wings having an exceptionally broad black border. On the under-side of this specimen there is a distinct trace of a sixth red spot on the fore-wings.
- d. Fore-wings greenish-bronze with the crimson spots small, and the 6th spot just visible (well marked on the under-side), the hind-wings are crimson with a broad black border. In none of the foregoing are the anterior-wings at all transparent.
- e. Green or blue-bronze, with markings similar to "*a*" but rather redder, and the 6th spot becoming much more visible, the black border of the hind-wings is decidedly narrower and more uniform, and the under-side of the fore-wings is suffused with red, they also have a tendency to being slightly transparent as is noticeable in *filipendulæ*.
- f. In this variety the sixth spot is well marked, and were it not for the very broad and blue-black border of the hind-wings, it might be mistaken for *filipendula*.

From our specimens of this insect we are much inclined to believe that considerable interbreeding must take place between it and the six-spot *Zygæna*.

We also took, in the same valley, a specimen with the fore-wings of a beautiful metallic-blue colour, with a distinct trace of a 6th spot, and the other spots well separated.

Zygæna loniceræ, Buttier valley : *filipendulæ*, Buttier valley and Col de Forclaz. It is really difficult to separate this from *transalpina*, but with one exception, we have come to the conclusion that our specimens are *filipendulæ* ; on the way up to the Col de Forclaz we took one variety transitional into *v. cytisi*, the two basal spots confluent, as also the two median, but the apical spots are very finely separated.

We now come to the handsome *Zygæna* taken by us in the Buttier valley. The fore-wings of which are opaque dull blue without any lustre, having six very small carmine spots, the median and apical one being very oblique and widely separated, all are united on the under-side by a crimson suffusion ; the hind-wings are carmine-red with a deep blue-black broad border. This is either a six-spotted form of *angelica* or a fine variety of *transalpina*.

Syntomis Phegea, Aosta. We were very much struck by the large size of these specimens ; those we have taken in the Visp valley are quite dwarfs in comparison, measuring 32 mm., in comparison with 41 mm.

Naclia punctata, Aosta, in the vineyards. Not uncommon.

Nola cristatula, Dranse valley below Orsières.

Setina aurita, Buttier valley near St. Remy, and Arve valley : *v. ramosa*, Buttier valley.

Lithosia lurideola, larva reared from Aosta.

Emydia cribrum v. punctigera. I reared a beautiful ♂ on the 29th of July from a larva found near Orsières.

Euchelia jacobææ, Gt. Salève and Dole.

Arctia purpurata, Dranse valley, near Orsières.

Spilosoma menthastri, Arve valley, near Chamouny.

Hepialus humuli, Dranse and Arve valleys.

Fumea — ? , three specimens taken on the Italian side of the Great St. Bernard, which have a close resemblance to *Sapho*, but we cannot really determine if it is that species.

Porthesia similis, a ♀ reared from larva found at Aosta.

Bombyx neustria, reared, larvæ plentiful in Dranse and Buttier valleys.

Bombyx quercus, Larva found at Dole.

Pygæra pigra, Argentière (Arve valley).

Diloba cæruleocephala, larva reared from Orsières.

Acronycta rumicis, larva reared from St. Gervais (Arve valley).

Caradrina quadripunctata, Aosta.

Amphipyra tragopoginis, reared from larva found in the Dranse valley.

Scopelosoma satellitia, reared from larva found in the Arve valley.

Calocampa vetusta, reared from larva found near Orsières.

Cucullia verbasci, larvæ found in the Buttier valley.

Plusia gamma, Dranse and Buttier valleys.

Anarta melanopa v. *rupestralis*, Great St. Bernard, near summit of Pass.

Prothymia viridaria, Gt. St. Bernard, Dranse and Arve valleys.

Agrophila trabealis, Gt. Salève.

Euclidia glyphica, Buttier and Dranse valleys.

Hypena proboscidalis, Dole.

Rivula sericealis, Martigny.

Geometra vernaria, Dole.

Nemoria viridata, Chamouny.

Acidalia sericeata, Aosta: *dilutaria*, Aosta: *humiliata*, Aosta, Dole: *holosericeata*, Aosta: *marginipunctata*, Dranse valley below Orsières: *strigillaria*, Dole: *imitaria*, Aosta.

Pellonia calabraria, Gt. Salève.

Abraxas marginata, Dranse valley.

Cabera exanthemaria, St. Remy, Dranse valley.

Ellopiæ prosapiaria v. *prasinaria*, Dole.

Rumia luteolata, Martigny. Larger and paler than British specimens.

Macaria alternata, Aosta. Common in the old bed of the river Doire, which was densely overgrown with *Hippophae*: the specimens were smaller and much paler than usual.

Gnophos glaucinaria, Dranse valley below Orsières.

Fidonia carbonaria, Gt. St. Bernard.

Ematurga atomaria, common everywhere.

Diastictis artesiaria, Aosta. Flying with *M. alternata*.

Phasiane clathrata, Dranse valley, Great Salève, Dole.

Scoria lineata, Dranse valley.

Ortholitha bipunctaria, Dole.

Minoa murinata, near Orsières, Dole.

Odezia atrata, Dranse, Buttier, and Arve valleys.

Anaitis plagiata, Dole.

Cidaria dotata, Martigny. Much finer than British specimens:

variata v. *stragulata*, Chamouny: *turbata*, Gt. St. Bernard, St. Remy, and Chamouny: *aqueata*, Arve valley: *fluctuata*, Dranse valley: *montanata*, St. Remy and Dranse valley: *ferrugata*, Buttier and Dranse valleys, and Chamouny: *incultraria*, Chamouny: *frustrata*, St. Remy: *galiata*, Dranse valley and Dole: *rivata*, Dole: *tristata*, Great St. Bernard, Buttier and Dranse valleys: *molluginata*, St. Remy: *alchemillata*, Great St. Bernard: *adæquata*, Great St. Bernard: *albulata*, St. Remy, Chamouny and Dole, common in every shade of colour, from almost white to quite dark: *bilineata*, Great Salève and Dole: *trifasciata*, St. Remy, very abundant: *berberata*, Aosta: *rubidata*, Aosta and Dole.

Eupithecia rectangulata, Aosta: *tenuiata*, Dole, and several others which we are at present unable to name.

Scoparia dubitalis, Dranse valley, below Orsières, and Dole: *sudetica*, Dranse valley and Chamouny.

Hercyna Schrankiana, Gt. St. Bernard and Chamouny: *phrygialis*, Gt. St. Bernard and Chamouny.

Eurhypha urticata, Dole.

Botys nigralis, Arve valley: *octomaculata*, Dranse valley: *aurata*, Buttier valley, south of St. Remy: *cespitalis*, common everywhere: *rhododendronalis*, St. Remy: *fuscalis*, Dranse valley: *sambucalis*, Col de Forclaz. Larger and paler than British examples.

Eurycreon verticalis, Dranse valley and Dole.

Pionea forficalis, lower portions of the Buttier and Dranse valleys.

Crambus cerusellus, Buttier valley: *pascuellus*, common everywhere, Aosta specimens very dark and bright: *pratellus*, common everywhere: *dumetellus*, Dranse valley, and very abundant at Chamouny. *hortuellus*, Chamouny and Great Salève: *chrysonuchellus*, St. Remy: *conchellus*, Dranse valley: *culmellus*, Chamouny: *perlellus*, Martigny and Chamouny: v. *Warringtonellus*, Chamouny.

Hypochalcia ahenella, Chamouny.

Aphomia sociella, Aosta.

Among the *Tineæ* I will only mention the following:

Plutella cruciferarum, Gt. St. Bernard near summit of Pass. Antennæ annulated.

Cerostoma persicella, Aosta and Dole. There were certainly no peach trees in the latter place.

Mimæseptilus serotinus, Orsières.

Aciptilia pentadactyla, Dole.

Alucita hexadactyla, Orsières.

Before closing this account, I cannot refrain from remarking a curious feature we have been much struck by during our sojournings among the Swiss Alps, viz., the remarkable predominance of black (or

so nearly approaching that hue, as to appear black at a very little distance) and yellow as the colours of the majority of the larvæ, this being particularly noticeable at high altitudes, say above 7000 feet. Last summer we found, among innumerable *exulans* larvæ on the Great St. Bernard, several others simulating their general appearance very closely, so that it would seem from this that there must be some protective power in these colours; it cannot, however, be any similarity to their feeding-ground, as they are rather conspicuous on the bright green *Silene acaulis* with its pretty pink flowers, and on the *Alchemilla*, &c., all just refreshed after the melting of the snow, neither can they be said to coincide with the lichen-covered rocks, over which we have noticed them crawling some distance away from us. Among others we found some handsome larvæ, from which the following hasty and incomplete description was taken at the time. "Ground-colour velvety-black with a narrow band of yellow at the juncture of each segment, and a central dorsal row of yellow spots. The black spiracles finely encircled with yellow are bordered above and below by a row of yellow spots. On each segment are several stout fleshy black spines emitting fine black hairs, which (spines) are most numerous on the central segments. Head, shining black." Only one succeeded in pupating and from this a shrivelled ♂ *Melitæa Cynthia* emerged in July. The pupa had a large proportion of black in it on a greyish ground, but this, undoubtedly, would closely assimilate with the rock on to which it would attach itself. The pupa of *M. Didyma* (which I have reared from the Saas valley and Zermatt) is also similar to that of *M. Cynthia*, and in the same way would have a protective influence. Again, *Parnassius Apollo* has a blackish-purple larva with deep yellow spots. It would be interesting to ascertain whether there can be any protective power in these colours, as if there is, and we knew what it was, we might then be able to account for their preponderance at high altitudes.

As my description of the larva of *Calocampa vetusta* found at Orsières differs from that given by Guenée, and as I have twice found the same variety, it may be well to record it. "Ground-colour apple-green with darker back, and pale green central stripe, on both sides of which is a row of small white spots finely encircled with black from the third to the twelfth segment inclusive, each row consisting of three spots triangularly disposed on every segment. Spiracular stripe white, edged above by a black line. Spiracles scarlet. Fore-legs yellow, claspers tipped with pinkish-buff. Head yellowish. Length, about 54 mm. Stout in proportion."

Augustus Road, Birmingham :
March 24th, 1884.

NEW LONGICORN COLEOPTERA OF THE *MONOHAMMINÆ* GROUP
FROM TROPICAL WEST AFRICA.

BY H. W. BATES, F.R.S., &c.

The collections sent home by recent travellers from tropical east and west Africa, and particularly from the coast region between Cameroons and Angola, have given indications of a surprising wealth of species in the Coleopterous family *Longicornia*. A large number of new genera and species have been published by Thomson, Von Harold, Quedenfeldt, and others, but countless others exist undescribed in English collections, which it is the intention of the present paper to reduce in some small degree. The *Monohamminæ* group, of which the well-known European *Monohammus sutor* and *sartor* may be taken as types, seem to be very numerous and varied in these regions; whether they approach in number and variety the rich fauna of Indo-Malaya cannot at present be guessed at, but it is certain they far surpass tropical America, where only five genera are known, two only of which occur in Brazil. It was one of the late Andrew Murray's favourite zoo-geographical speculations to trace an intimate relation between the faunas of West Africa and tropical America, whence he inferred a former land connection between them; but the *Monohamminæ* lend no countenance to such a hypothesis; no genus at present found being common to the two continents.

TRICHOLAMIA, n. g.

General form of *Monohammus*, except that the elytra are relatively shorter (especially in the ♀), and the antennæ very little longer than the body, even in the ♂, considerably shorter in the ♀. The pro- and meso-sternal processes are simple, the claws divaricate, the cicatrice of the scape, though sharply defined and scabrous, only half enclosed by a sharply-defined rim. The head has elevated, but not very pointed, antenniferous tubercles, the front is short and quadrate; the lower lobe of the eyes large and broad; the palpi in the ♂, both maxillary and labial, have the terminal joints broadly truncate-ovate, or campanuliform, in the ♀ slender and sub-acute. The thorax is much broader than long, with lateral tubercles median, broad, and spinose at their apices, the anterior (one) and posterior (two) transverse sulci well-marked, the disc very uneven, with a broad central depression. The elytra are elongate-oblong, convex, obtusely rounded at the apex, sparsely punctulate and clothed (besides the fine compact tomentum) with very long upright hairs. The antennal joints 1—6 are ciliated beneath, and the scape clothed all round with long black

hairs, similar to those of the elytra. The fore-legs are not notably longer than the others; the middle tibiæ have their oblique groove nearer the middle than in *Monohammus*, and unaccompanied by a tubercle. The terminal joints of the ♂ palpi have the same form as in *Tympanopalpus*, but are much less dilated, and there is no other resemblance between the two genera, except in those structural points in which both agree with the *Monohammia*.

TRICHOLAMIA FLAGIATA, *n. sp.*

Clothed with fine tawny-ochreous, the elytra with tawny-ashy, tomentum, the head and thorax partly, the scape and elytra wholly, beset with remarkably long, erect black hairs; the elytra have a basal fascia, and on each side two lateral patches, one larger about the middle, a second smaller near the apex, brownish-black.

Long. 25—28 mm., ♂ ♀.

Mt. Cameroons.

BATOMENA, *n. g.*

Of broader and more depressed form than *Monohammus*, the surface of the elytra armed with numerous briar-like spines arranged in rows, most numerous and continuous on the sides, the middle-sutural and posterior parts free. The head is very similar in form to *Monohammus*, the forehead moderately long and plane, the lower lobe of the eyes elongated, the antenniferous tubercles more elevated and separated by a deeply impressed line, which extends from the occiput to the epistome. The antennæ in the ♂ are nearly twice the length of the body, the cicatrice of the scape enclosed by a sharp rim and hairy, joints 1—5 ciliated beneath. Sterna simple, legs rather elongated; middle tibiæ with tubercle and groove near the middle.

BATOMENA MULTISPINIS, *n. sp.*

Dark brown, clothed with lighter brown laid pubescence, which on the elytra forms short vittæ and spots: head and scape with scattered punctures: thorax transverse, with very strong and acute lateral spine and deep transverse groove in front and behind, the disc rather uneven, impunctate. Elytra sparingly punctured near the base, each with five faint longitudinal costæ, each armed with a row of thorn-like spines, a few only (2 or 3) at the base of the 1st costa, the number increasing to 10—15 on the outermost costa; apex of the elytra rounded.

Long. 34—38 mm., ♂ ♀.

Mt. Cameroons: alt. 7000 ft.

MELANOPOLIA, *n. g.*

Moderately elongate and narrowed behind, interruptedly clothed with fine laid pubescence. Head exserted, front broad and quadrate, lower lobe of the eyes much broader than long; antenniferous tuber-

cles moderately elevated, divergent, apices not produced: palpi slender, pointed. Thoracic lateral tubercles median, conical, more or less pointed. Elytra obtuse or subtruncated at the apex. Prosternum arcuated, simple; mesosternum either simple, declivous, or vertical in front, plane behind. Legs moderate, middle tibiae with tubercle and groove near the middle of their outer edge.

Antennae, ♂, one-half longer than the body, scape nearly as in *Monohammus*, cicatrice scabrous, completely enclosed with a sharp carina, 3rd joint longer than the scape, 4th a little shorter, 5—10 gradually decreasing, 11th longest of all. ♀. As in ♂, except that they are shorter and the third joint is thickened towards the apex into a stout elongate club, clothed with black hairs.

The elongate-clavate form of the 3rd antennal joint appears to be a peculiarity of the ♀ (at least it is so in one of the species), of the other two only females are known. The vertical mesosternum of the first species described is the only structural difference I can detect between it and the other two, and all agree in facies and clothing. The genus has very little in common with *Rhodopis*, in which the 3rd antennal joint is similarly clavate, and appears to be allied to *Domitia* (Thoms.), which has, however, simple middle tibiae.

MELANOPOLIA FRENATA, n. sp.

Shining black; a tomentose hoary belt across the forehead below the eyes, continued on each side along the cheeks and the flanks of the thorax to the middle base of the elytra, and thence curving to the suture at about one-third the length, dissolving into confluent spots; similar confluent spots scattered over the remainder of the elytra. Antennae with joints 3—10 ringed with grey at their bases; sides of the body beneath and legs thinly clothed with short hoary pile. Thorax with broad conical lateral tubercles, disc a little depressed and uneven, sparingly punctured. Elytra briefly sinuate-truncate at the apex, finely and rather widely punctured, chiefly in lines, throughout, and faintly bicostate. Mesosternum vertical in front. Antennae, ♂, with the 3rd joint towards the apex very slightly thickened; ♀, much thickened, and clothed with brush-like black hairs. Long. 16 mm., ♂ ♀.

Gaboon.

MELANOPOLIA FABINOSA, n. sp.

Black; a grey tomentose belt across the forehead below the eyes, continued along the cheeks, lower flanks of the thorax, and the sides of the breast; two grey vittae on the vertex, continued to the thorax, curving respectively on each side of the disc, and meeting on the hind margin; the elytra speckled with grey tomentum, which condenses in larger patches at the base of the suture (including the scutellum), and on the sides near the middle and the apex. Thorax with strong acute lateral tubercles, the disc depressed, uneven, and coarsely punctured. The elytra obtusely truncated at the apex, punctulate throughout, partly in lines. Mesosternum simple, arcuated: body beneath grey.

♀. Antennæ brownish, variable, 3rd and 4th joints grey at the base, 3rd joint clavate, the thickened part clothed with short black hairs. Long. 21—22 mm., ♀.

Gaboon.

MELANOPOLIA CONVEXA, n. sp.

Similar in colours to *M. farinosa*, but differing in the much greater convexity of the elytra, especially behind, where they are rather steeply declivous; the thorax is also convex, instead of concave on the disc, and is there tri-tuberculate; the lateral tubercle is equally strong and pointed. The streaks and spots of tomentum are rather whiter, but similarly placed, viz.: the frontal belt is continued along the cheek and flank of thorax to the sides of the breast; and the vittæ on the vertex behind the eyes continue along the thorax from the fore to the hind margin, but they do not converge to or join on the latter: the scutellum is black, and the grey speckled tomentum on the elytra is condensed only near the shoulder. Lastly, the apices of the elytra are not in the least truncated, but rounded. The legs are black, ringed with grey.

Long. 20 mm., ♀.

Gaboon.

NOSEROCERA, n. g.

Differs from *Monohammus* by the form of the head (though it is not retractile below), and particularly the large volume of the lower lobe of the eyes, also by the tuberculose disc of the thorax, in which characters it resembles the *Phrynetides*. Palpi robust, terminal joints sub-ovate, apex truncated. Antennæ (♀?) rather longer than the body, scape as in *Monohammus*, cicatrice narrow, but sharply limited by a complete rim; 3—5 joints broad, compressed, with their apices sub-nodose, sparsely ciliated. Elytra moderately narrowed behind, apex rounded, surface sub-depressed. Middle tibiæ grooved and slightly tubercled near the middle of their outer edge. Processes of the pro- and meso-sterna simple.

An interesting genus, apparently connecting the *Monohammus* with Lacordaire's Group, *Phrynetides*; the species described below somewhat resembles *Homelix unicolor* (Quedenfeldt), belonging to the latter Group.

NOSEROCERA TUBEROSA, n. sp.

Elongate, surface rather depressed, cinnamon-brown, clothed with extremely fine laid pubescence; scutellum yellow, coarsely tomentose; thorax impunctate, disc with five large, slightly elevated tubercles, lateral spine strong, elongated, median: elytra with the basal half subserrate punctulate, apical half smooth.

Long. 21 mm.

Mt. Cameroons.

MONOHAMMUS PICTOR.

Dark velvety-brown, finely tomentose, crown and thorax with three fine longitudinal lines tawny-ochreous, elytra tawny-ochreous, the basal margin near the shoulders, a large semi-oval marginal spot in the middle, and a similar much smaller

spot adjoining it towards the apex, dark brown, the larger spot enclosing a small ochreous spot adjoining the margin; body underneath clothed with thin and fine tawny tomentum. Head elongated behind the eyes, impunctate like the thorax: elytra gradually attenuated, apex very obtusely truncated, somewhat thickly punctulated over their basal half. Legs elongated, fore-legs in the ♂ greatly so, and with a tubercle at the commencement of the oblique tibial groove; tubercle and groove of the intermediate tibiae below the middle. Long. 22 mm., ♂ ♀.

Mt. Cameroons.

Forms with the following, and with *M. ruspator* (F.), *irrorator* (Chevr.), and other species a distinct section of the genus. The present species much resembles the Indo Malayan genus *Epepeotes*, but wants the tuberculated mesosternum.

MONOHAMMUS X-FULVUM, n. sp.

Clothed with extremely fine, rather silky, brown tomentum, the vertex and thorax with three continuous tawny-buff lines, the elytra, with a large, common, X-shaped figure of the same colour, the upper branches of which reach the shoulders, and the lower (much shorter) approach the lateral margin near the apex, the four branches meeting at the suture and for some distance forming a common sutural vitta; the pale sutural border continues posteriorly to the apex, and there is a narrow pale transverse streak in the middle of each elytron towards the margin. The head and thorax impunctate, except a few large punctures on the stout lateral tubercles, the elytra are punctulate, rather widely, and in some places subseriate, at the base asperate, throughout; the apex obtusely truncated. Long. 22—28 mm., ♀.

River Ogowé; Gaboon; Landana (Loango); Angola.

This well-marked species does not appear to have been described by any of the authors who have described *Longicornia* from the Gaboon and Angola.

11, Carleton Road, Tufnell Park:
May, 1884.

Atemeles paradoxus, &c., in the Isle of Wight.—While collecting at Sandown on April 12th, I noticed a small black ant with something dark in its mouth, which looked like the half of some Hemipterous insect; I tried to make the ant drop the object, but it held to it with great pertinacity, and it was only with considerable difficulty that it was induced to relinquish it: the object then uncurled itself, and turned out to be a fine specimen of *Atemeles paradoxus*, two or three times as large as the ant which was carrying it. In the same place I found three specimens of *Trichonyx Maerkelii* and some other *Scydmanida*.

The bitter east winds rendered collecting almost useless. At Ventnor I found *Bryaxis Waterhousei*, *Lithocharis maritima*, and some of the other usual beetles, but all very sparingly; in one sheltered place on the cliffs *Ceuthorhynchus cyanipennis* might be found in some abundance, and a few *Thyamis dorsalis*; *Molytes coronatus* occurred near Brading. On the whole, I never found the Isle of Wight so unproductive.—W. W. FOWLER, Lincoln: May 8th, 1884.

Lamprinus saginatus, &c., in Dean Forest.—On Good Friday last, I found a single specimen of *Lamprinus saginatus* in moss, in one of the enclosures in the Forest of Dean. In a large *Boletus* growing on a Beech stump near the "Speech House," occurred *Gyrophana strictula* and *minima*, and, under the bark of the same stump, I captured *Leptusa analis*, and about 50 specimens of *Pteryx suturalis*. I also took a few specimens of *Homalota eremita* in moss. *H. eremita* has occurred to me in several midland counties, and is, therefore, not altogether a hill species as hitherto supposed.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham: May 16th, 1884.

Coccinella bipunctata, L., and *C. variabilis*, Ill., in cop.—To-day I found a male of the former in absolute conjunction with a female of the latter. The contrast of colour and marking between the two was very conspicuous, for although *C. variabilis* is protean in the pattern of its markings, it never simulates the constant maculation of *C. bipunctata*.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: 17th May, 1884.

A hunting ground on the south-east coast.—As the season for visiting the seaside is approaching, it may perhaps be useful to such entomologists as turn their attention to Hastings as a summer resort, to be reminded of one of the few good hunting grounds (at least, for *Coleoptera* and *Hemiptera*) that still remain intact in that growing neighbourhood, where "bricks and mortar" are so rapidly carrying all before them. The spot referred to has been frequently mentioned in the pages of this Magazine, and is known as the Camber sandhills; it consists of a stretch of low dunes of blown sand held together by sturdy growths of *Psamma arenaria*, on the eastern side of the mouth of the Rother. A run of twenty minutes from Hastings in the commodious (!) carriages of the South-Eastern Railway carries the explorer to the ancient town of Rye, the point of disembarkation for Camber. Passing through the town or round the base of the hill on which it is built, a ferry is reached, by which one is conveyed across the muddy Rother. A level and uninteresting walk of about a mile and a half, which in anticipation does not seem nearly so far, then leads along the bank of the river to the sandhills. The visitor should go prepared to make a day of it, for, once landed at Rye, there is (owing to the delightful arrangements of the Railway Company) no chance of a return to Hastings between mid-day and evening, except on one day in the week. Arrived at the sandhills, various rejectamenta first claim attention, and are pretty sure to yield in plenty *Brosicus*, the two *Dichiotrichi*, and the disgustingly odorous *Pogonus chalceus*. Excrementitious matters and dead animals generally furnish good *Saprinæ*, including *immundus*, *metallicus*, and *maritimus*. *Heptaulacus sus* has also turned up on one occasion. At the roots of the *Psamma* there are plenty of common things, some of them, such as *Coccidula rufa*, in absolute swarms. *Notoxus* also is sometimes abundant here. Though not a matter strictly entomological, it may be interesting to note here that the pretty little pseudo-scorpion, *Chelifer Degeerii*, Koch, is common in the same places. All the *Calathi* occur except *piceus*, the most ubiquitous being *mollis*, which is a perfect nuisance to the collector. On windy days *Ægialia arenaria* and *Cneorhinus geminatus* vie with each other in equally futile

endeavours to scale the steep and treacherous sand-slopes, at the base of which are dangerous pitfalls in the shape of burrows of a handsome spider, which is ever on the look out for those hapless insects that have come to grief in miniature sand-avalanches. *Orthochates* may be found lying about at the base of the sandhills, inert as usual. *Harpalus bordatus* and *servus*, *Ocypus ater*, *Silpha lavigata*, *Sarrotrium*, *Crypticus*, *Microzoum*, *Phaleria*, *Nacerdes*, and *Helops pallidus*, sometimes reward the collector, and at the right season *Ctenopus* forms a conspicuous object on the *Galium*, and *Malachius marginellus* and *viridis* occur by sweeping, the latter being especially abundant at one small spot behind the first range of hills. On the land side moss grows thickly and forms the home of numerous *Brachelytra* and *Geodephaga*. *Philonthi* swarm in it, especially *politus* and the red-spotted species, and the pretty *Xantholinus tricolor* is sometimes tolerably common. The genus *Amara* is well represented, *lucida* and *tibialis* being specially plentiful; *converiuscula*, *bifrons*, and *rufocincta* have also occurred. In the moss, too, may be met with *Hyperaspis*, *Scymnus frontalis* and *Harpalus anxius*. Amongst more minute species *Phytosus balticus* and *Phlaeobium clypeatum* occasionally put in an appearance.

The Hemipterous fauna also is interesting: the moss yields abundance of *Rhyparochromus pratextatus* and *Plinthisus brevipennis*, while *Ceraleptus lividus*, *Calyptonotus lynceus*, and *Rhyparochromus chiragra* and *sabulicola* sometimes turn up. The *Psamma* yields by sweeping, *Chorosoma*, *Myrmus*, and the large and pale var. of *Melagocera ruficornis*, and the Homopterous *Philænus lineatus* is a perfect pest. *Pæciloscytus unifasciatus* sometimes occurs on low plants, and *Systellonotus*, *Coranus*, and the shovel-headed *Euplex producta* and *spatulata* at roots. A solitary patch of *Hippophaë rhamnoides*, which crowns one of the mounds, yields *Psylla hippophaës* and abundance of *Anthocoris nemoralis*. *Plagiognathus albipennis* is found on plants of *Artemisia* not far off.

Amongst the *Hymenoptera* may be mentioned the handsome bees *Dasypoda hirtipes* and *Megachile maritima*; and amongst the *Lepidoptera*, *Charocampa porcellus* and *Eubolia lineolata*.

In conclusion, I would acknowledge my indebtedness to my friends the Rev. E. N. Bloomfield and Mr. E. P. Collett for some of the information contained in these notes.—E. A. BUTLER, 7, Turle Road, Tollington Park, N.: May 18th, 1884.

Note on Nepa cinerea.—Some time ago, while searching for *Coleoptera* upon the borders of a small pond at Dulwich, I noticed a fly struggling in the mud, some distance from the water, and apparently unable to release itself. Upon closer investigation I found that the insect was in the grasp of a *Nepa*, which had buried itself in the mud, and left merely the tips of the jaw-like anterior-limbs projecting above the surface. This position must, I think, have been voluntarily assumed, for the *Nepa* was some five or six inches distant from the edge of the pond itself, and so could hardly have been left stranded by the retreat of the water consequent upon evaporation, which couldnot, at that time of the year (early in May) have been very rapid. It would be interesting to learn whether the *Nepa* has ever been discovered in a similar position by other observers, or whether this was an enterprising specimen which had departed from the usual habits of its kind, and struck out a line of life for itself.—THEODORE WOOD, 5, Selwyn Terrace, Upper Norwood, S.E.: May 10th, 1884.

Deleaster dichrous at Shirley and Norwood.—On the 29th of last month I took a specimen of *Deleaster* as it was flying along at dusk across the road leading from Woodside Station to Shirley Common. This evening I have met with a second example running upon the pavement adjoining the Crystal Palace. My only previous capture of the insect was on April 17th, 1880, an unusually early date of appearance.—In.

Gerris rufoscutellata, Latr., near Norwich.—A dead ♀ specimen of a *Gerris*, which agrees in every respect with the description of this species at p. 270 of Vol. IV of this Magazine, and also that in Mr. Saunders' "Synopsis," was found by my friend Mr. H. J. Thouless, floating on the surface of a pond on Mousehold Heath near here, on the 15th March last. The occurrence of this example is somewhat interesting, since it settles, beyond question, the claim of the species to a place in the British list. It is either very rare or peculiar in its habits, for the heath in question has been so very closely worked for *Hemiptera* for some years past, that it is almost impossible that so large and conspicuous an insect could otherwise have escaped detection.—JAMES EDWARDS, 136, Rupert Street, Norwich: 16th May, 1884.

[Vide Ent. Mo. Mag., xvi, p. 175, and xvii, p. 278.—Eds.]

Great abundance of *Chrysopa vulgaris* at Lowestoft.—When at Lowestoft last July I was greatly struck with the number of *Chrysopa vulgaris* which swarmed on the sand-hills, in such numbers that a couple of sweeps with a net would often produce ten or a dozen, while in the streets at the other end of the town there were generally six or eight on each lamp by 10 p.m. I did not notice any abundance of *Aphides* to account for this.—W. C. BOYD, Cheshunt: May 12th, 1884.

Sympetrum Fonscolombii at Deal.—In the summer of 1881 I captured a dragon-fly in the district lying between the marshes and the sandhills at Deal, which was quite unknown to me. Upon referring to Dr. Hagen's Synopsis of the British Dragon-flies in the Entomologist's Annual for 1857, I found it agreed with the description of *S. Fonscolombii*, Selys, a very rare species, of which Dr. Hagen remarks, "Habitat near London (a single ♀ in the collection of the British Museum, formerly in that of Mr. Stephens)." Under that name it has remained in my collection, but I deferred publishing the capture until it had been verified by some authority. Mr. McLachlan's Annotated List in the April No. of this Magazine (Ent. Mo. Mag., xx, 251) at once reminded me of my neglected rarity, and I submitted the specimen to him; he has very kindly examined it, and returned it to me as a veritable *S. Fonscolombii*.—C. G. HALL, 3, Granville Road, Deal: May 3rd, 1884.

[This is the third British example known to me; it is a ♂, not very adult.—R. McL.]

Sympetrum meridionale.—At the sale of the late Mr. Wailes' collection this day, I saw the example of *S. meridionale* alluded to in my "British Dragon-flies annotated," in April last (cf. Ent. Mo. Mag., xx, p. 253). It is truly this species, and

bears evidence of having been sent to Mr. Wailes by the late Mr. J. C. Dale, for it bears a label "*meridionalis*" in the handwriting of the latter. It has passed, I believe, into the collection of Dr. Mason of Burton-on-Trent.—R. McLACHLAN, Lewisham: 14th May, 1884.

Varieties of Colias Edusa at Plymouth.—About seven years ago, when collecting one day in a quarry a few miles from here, I secured six specimens of *Colias Edusa* well worthy of a place in the cabinet. Four were fine specimens of the variety *Helice*; one other female was a variety intermediate between *Helice* and the normal form, being of a pale ochreous colour; and the remaining specimen, the greatest prize of all, was a male, in which the usual orange colour was replaced by a clear bright lemon-yellow—a most lovely variety. Considering that not more than a dozen *Edusa* were flying about the quarry, the proportion of interesting variations was satisfactorily large.—G. C. BIGNELL, 7, Clarence Place, Stonehouse, Plymouth: May, 1884.

[Mr. Bignell's note reminds me that in September, 1861, I captured a solitary *Colias Edusa* at Plymouth, a ♀ in which the ordinary pale spots in the black borders of the wings are *totally* obliterated. Amongst hosts of varieties of this insect I have never seen a precise parallel to this example.—R. McL.]

Varieties of Ennomos angularia and Ceropacha ridens.—A larva found some years ago feeding on elm at Exeter, and reared on the same, produced a female *Ennomos angularia*, of which the fore- and hind-wings are entirely of a dark umber-brown, while the thorax is of the usual yellowish colour.

Another beautiful variety reared here is *Ceropacha ridens*, of which I obtained two specimens, having the central band of the fore-wings normal, but the whole of the basal and apical areas of a whitish-green, without any trace of markings or cloudings, except four dark streaks on the nervures before the apex, and the usual spots on the cilia.—ID.

Note on the food plant of Gelechia subocellea.—In Matley Bog in the New Forest, and by the sides of the small streams which trickle down the cliffs near Totland Bay in the Isle of Wight, the larva of this species occurs very commonly in the flower-whorls of a *Mentha*, which I believe to be *aquatica*. On mentioning this to Mr. Stainton he told me that, on the Continent, it also feeds on *Thymus vulgaris*.—W. H. B. FLETCHER, 6, The Steyne, Worthing: May 14th, 1884.

Bryophila impar, n. sp., distinct from *B. glandifera*.—In consequence of the confusion which appears to be made between the mealy-looking variety of *B. glandifera*, which occurs along with the typical form on the coast, and which is sold by the dealers as var. *Par*, and the *Bryophila* which we take at Cambridge, it will be as well to give the latter, which already has a local habitation, a distinctive name as well. Mr. Stainton, who has seen my series of the Cambridge insect, and considers it certainly distinct from Hübner's var. *Par*, said, in his joking way, "call it *impar*": and by this name I propose to distinguish it for the future. I should add that be-

sides Cambridge, we must now include Cork as a locality. I have seen specimens, belonging to Mr. de V. Kane, which he informs me were caught in that neighbourhood.—W. WARREN, Merton Cottage, Cambridge: *May 15th*, 1884.

Effect of Cyanide upon colour.—A very curious case of artificial colouring in a butterfly has been sent me by a friend. He says that the specimen, a male *Gonopteryx rhamni*, was placed in a spare cyanide bottle, and left undisturbed for two years; but that, at some intermediate time, the stopper was tampered with and not properly replaced, so that air was introduced. The result is, that the butterfly is richly coloured with crimson along the costal area, and partially round the other margins of the fore-wings, and has large blotches of the same on the hind-wings. Indeed, the only portion of the wings which is left entirely of the usual brimstone colour is that portion which, in *G. Cleopatra*, is clouded with crimson.—CHAS. G. BARRETT, Pembroke: *9th April*, 1884.

Obituary.

Edwin Birchall died at Douglas, Isle of Man, on May 2nd, at the age of 65. He was born, we believe, near Leeds, in which town his father was in business in a large way. His early education was received in Leeds, but subsequently he was sent to the Friends' school at York, and among his schoolfellows were T. H. Allis, B. B. Labrey, Tuffen West, and Benjamin and Nicholas Cooke, all of whom subsequently made reputations as naturalists. He became a partner in his father's firm, which sometime after got into difficulties, and he then became Messrs. Pickford and Co.'s agent at Dublin, and, afterwards, at Liverpool. Subsequently he started in business on his own account in Bradford, but soon gave it up, and after holding, for a time, an official capacity in Leeds, settled in the Isle of Man. For several years he had been in very bad health, originating, probably, from a fall down a cliff while engaged in entomological pursuits. Edwin Birchall was a born naturalist, an enthusiastic collector, and of an extremely genial and buoyant disposition; at the same time he was a strong partisan, and enjoyed a controversy in print, especially on theological matters. His first published note (not entomological) with which we are acquainted, appeared in the "Zoologist" for 1850, p. 2954. Afterwards he was a constant contributor on Entomological subjects to the various periodicals. His residence in Ireland brought him more prominently forward; the entomology of that island was but little known. Edwin Birchall set himself to work, with characteristic energy, to investigate its Lepidopterous fauna, with the result of discovering fine new British species, and remarkable local varieties of others already known. These investigations culminated in a List of the *Lepidoptera* of Ireland that appeared in Vol. ii (1866-7) of this Magazine, which may be regarded as about the most important of his published papers. In it he enumerated 961 species (a few more were added in supplements) as against 636 in the previous Irish List. Furthermore, these investigations brought him into correspondence with Darwin, Wallace, and other natural philosophers, who profited by his judiciously-reasoned ideas on the origin of the British Lepidopterous fauna, and on that of Ireland in particular.

Mr. Birchall had been long a widower, but leaves three sons and one daughter; the latter devotedly attended her father during his long illness, and some of his published notes were illustrated by her pencil.

ENTOMOLOGICAL SOCIETY OF LONDON : 7th May, 1884.--J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

Before the business of the meeting commenced, the President made a few touching and appropriate remarks concerning the loss the Society, and Entomology in general, had sustained in the sudden death since the last meeting of Sir Sidney S. Saunders, one of the Vice-Presidents.

Messrs. William White, of Morden House, Highbury Hill, and W. H. Patton, of Waterbury, Connecticut, U.S.A., were elected Members.

Mr. Kirby exhibited a small dark example of *Samia Cecropia* bred by Mons. Wailly.

Mr. C. O. Waterhouse exhibited two species of Dragon-flies captured by the Rev. F. A. Walker in the Island of Rhoda (? Rhodes); these were *Crocothemis erythraea*, Brullé, and *Trithemis rubrinervis*, Selys. He also exhibited from his garden an *Aphis* on an apple leaf infested by a parasitic *Aphidius*, which latter, instead of undergoing its transformations within the body of the *Aphis*, as is usually the case, came out and formed a silken cocoon beneath the body.

Mr. S. Stevens sent for exhibition specimens of *Andrena fulva*, which this year was so abundant in his garden as to become a nuisance by burrowing in his lawn. Messrs. McLachlan and C. O. Waterhouse said that precisely analogous conditions had recently come under their notice.

Mr. Olliff exhibited a new species of *Helota* collected by Dr. Welwitsch in Angola, which he proposed to term *H. africana*; it was of great interest, the genus being otherwise eastern.

Mr. E. A. Fitch exhibited *Isosoma orchidearum*, Westwood, bred from knots in the stems of *Cattleya Triana* in an orchid-house at Southport. He alluded to the vexed question whether *Isosoma* and other *Eurytomidae* are parasitic or not. Although he could find no other larva in the stems that could be the "host" of the insect, he still believed in its parasitic nature, and his informant distinctly alluded to two kinds of larvæ as being in the stems.

Mr. Billups exhibited twelve species of *Hemiptera* collected by him at Headley Lane on January 14th this year, viz., *Acalypta parvula*, D. & S., *Cymus clavicularius*, Fall., *C. glandicolor*, Hahn, *Anthocoris sarothamni*, D. & S., *Drymus sylvaticus*, F., *Metacanthus punctipes*, Germ., *Monanthia costata*, F., *M. cardui*, L., *Tropistethus holosericeus*, Hahn, *Piezostethus cursitans*, Fall., *Stygocoris sabulosus*, Schill., *Peritrechus puncticeps*, Thoms. Of these *M. costata* and *T. holosericeus* were generally considered rare species in England.

Mr. McLachlan called attention to the 1st vol. of Mr. A. D. Michael's magnificent work on the *Oribatida*, a Family of *Acari*, just issued by the Ray Society, and said that such a work was not only a credit to the Ray Society, but did honour to British Naturalists in general, and to the author in particular. The President and others coincided in this opinion, alluding to the extreme minuteness of the creatures and the great skill exhibited by Mr. Michael in the dissections and drawings. Mr. C. O. Waterhouse said that a complete set of the types had been presented to the British Museum.

Mr. A. R. Grote sent a paper (communicated by Mr. Butler) on the Lepidopterous genus *Hemileuca*. Mr. Distant was of opinion that the common N. American species might be easily acclimatized in England.

Mr. Butler communicated a paper on the Lepidopterous genus *Cocytia*.

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NOTES ON SOME HAWAIIAN CARABIDÆ.

BY THE REV. T. BLACKBURN, M.A.

With reference to the observations of Dr. Sharp on the genera of Hawaiian *Carabidæ* in the Ent. Mo. Mag. (Vol. xx, p. 218), I have to make the following remarks:—

Atrachynemis.—A re-examination of this genus satisfies me that it is better placed in the *Anchomenini* where Dr. Sharp places it than in the *Harpalidæ*, though I still consider that it has more than a superficial relation to that family. When I originally referred it to the *Harpalidæ*, it was with considerable hesitation, as it seemed to me to occupy a somewhat intermediate position, having the anterior tarsi in the male, at least (if I possess both sexes there is little difference), and the antennæ more or less Harpaliform. The former have the first four joints, though small, very wide and short, the 4th joint being fully as wide as the 3rd; the latter have the 3rd joint very evidently more strongly pubescent than the 2nd. The anterior tibiae, however (and the tarsi in some respects), are so decidedly Anchomeniform, while the pubescence and porosity of the 3rd joint of the antennæ are so evidently less than of the 4th, that I admit *Atrachynemis* may be rightly placed in the *Anchomenini*, while still believing that its analogies with the *Harpalidæ* are real. My specimens are without any pronotal setæ.

Anchomenus muscicola, mihi (included, I presume, by Dr. Sharp in his genus *Metromenus*), has a single systematic seta on either side of the pronotum, about the middle of the lateral margin—accidentally removed I suppose from Dr. Sharp's specimens, for the absence of pronotal setæ figures among the characters of the genus. I have two or three specimens in which it is conspicuously present on both sides, and several in which it is present on one side only; in the rest it is evident that the seta has been accidentally removed on both sides, but in every specimen I can detect under a moderate power the minute tubercles from which the setæ spring.

MAUNA, nov. gen.

It is necessary to add another generic name to those already coined for the Hawaiian *Anchomenini*. This name is required for the insect hitherto called *Blackburnia frigida*, mihi, but several times stated by me (Ent. Mo. Mag., vol. xv, p. 120; vol. xvi, p. 106) to be placed in the genus *Blackburnia* only provisionally, and with much hesitation. After reading Dr. Sharp's paper on the genera of Hawaiian *Carabidæ* (referred to above), with which I heartily agree, I see the impossibility

of placing this insect in any of his, or my, already characterized genera. I, therefore, characterize it as follows:—apex of elytra very obscurely sinuate; elytra strongly margined at base; suture between 2nd and 3rd segments of hind-body strongly defined, the apical three segments with very deep sutures; a systematic seta at base of pronotum on either side. I do not observe any other striking structural distinction from *Blackburnia*, but the species (*frigida*, mihi) is, as a species, very different from the known species of *Blackburnia*. I have given this genus a name from the Hawaiian language, referring to its connection with a lofty mountain.

Port Lincoln, Adelaide :
1884.

NOTES ON TENTHREDINIDÆ.

BY P. CAMERON.

(continued from Vol. xx, p. 265).

NEMATUS FLETCHERI, *sp. n.*

Black; antennæ brownish beneath, as long as the thorax and abdomen, tapering towards the apex; tegulæ, apex of coxæ, trochanters, base and apex of four anterior femora, extreme base and apex of posterior, four anterior tibiæ and tarsi, and posterior tibiæ, except the apex, white. Wings hyaline, costa fuscous, stigma blackish. Claws with a sub-apical tooth. Length, $2\frac{1}{2}$ — $2\frac{3}{4}$ lines.

The ♂ I have not bred, but a caught specimen from Thornhill seems to pertain to this species. It has the antennæ as long as the body, the 3rd joint is a little compressed; and they taper very perceptibly towards the apex.

The larva feeds on hawthorn, eating the leaves along the edge, against which the body is closely pressed. It is light green, the anal segment red, head brownish.

N. cratægi, Zaddach (Schr. Ges. König., xxiv, p. 147), appears to be very closely allied to this, but it would seem to differ in having the labrum, mandibles, and the edge of the pronotum, white; the antennæ red, except the two basal joints, which are black; and the apex of the middle tarsi and the base of the posterior are reddish-yellow.

Bred by Mr. J. E. Fletcher from larvæ collected at Worcester. I have also found it in Clydesdale. There is a third form found on hawthorn allied to *N. cratægi* and *Fletcheri*, but I have not yet made up my mind as to its specific distinctness.

Nematus politus, Zad. (1883), = *leucostigmus*, Cam. (1876).

Nematus commixtus, Zad., = *nigrolineatus*, Cam.

Glasgow: June, 1884.

ON AN EXTRAORDINARY HELICIFORM LEPIDOPTEROUS LARVA-
CASE FROM EAST AFRICA: SUPPLEMENTARY.

BY ROBERT McLACHLAN, F.R.S., &c.

I find that the singular shell-like cases from East Africa noticed and figured by me in the last No. (*ante* pp. 1—2) of this Magazine were not quite so unknown as I then suspected. Precisely similar cases from the Zanzibar coast were described and figured by Gerstäcker so long ago as 1873, under the name "*Cochlophora* (?) *valvata*," in the entomological portion of Van der Decken's *Reise*, Band iii, Abth. ii, pp. 379—381, pl. xvi, figs. 2 & 2a.

Gerstäcker's account and my own agree remarkably, even to the variation in the direction of the spiral. He went further than I have done, and burnt a portion of a case, with a view of determining the character of the ash.

In the "Zoological Record," vol. x, 1873 (1875), p. 392, the Lepidopterous portion of which was supplied by Mr. W. F. Kirby, we find, at p. 392, under "*Psychidæ*," the following:—" *Cochlophora* (?) *valvata*. Gerstäcker figures snail-shells which have been inhabited "by this species, and describes the remains they contain. V. de Decken's *Reisen*, iii, pt. 2, pp. 379—381." Now, Gerstäcker does not describe the cases as "snail-shells," but perfectly comprehended their real nature. He nowhere describes "the remains they contain," but, on the contrary, is careful to state that in none of the cases could he find the remains of either larvæ or pupæ. It is to be hoped that our "Zoological Record," in the success and accuracy of which all British Zoologists should take the warmest interest, may not often prove so misleading.

Lewisham, London:

June 18th, 1884.

ON THE LARVA, &c., OF *BERÆODES MINUTA*, LINNÉ.

BY KENNETH J. MORTON.

Down to the time of the publication of the "Monographic Revision and Synopsis of the Trichoptera of the European Fauna," writers on the Order had placed the small black insects belonging to the genera *Beræa* and *Beræodes* in the *Rhyacophilidæ*. But at page 490 of the

work referred to, Mr. McLachlan, while still retaining them as forming a Section of the same Family, pointed out that observations made by Brauer and Frauenfeld on the habits of the larva of *Beræodes*, rendered it practically certain that the proper location of the Section was in the *Leptoceridæ*; and in the Supplement, part ii, p. lxiii, and the Systematic Catalogue, the transfer of the two genera to the beginning of the latter Family is carried out. Frauenfeld bred *Beræodes minuta*; but no description of the larva appears to have been published, and the following notes, may, therefore, be of interest as confirming and supplementing what is already known on the subject.

On the 22nd March last, I found at the bottom of a small stream near here, at a place where *Beræodes* occurs rather commonly in the month of June, a number of small blackish cases, agreeing well with the indications given in the "Revision," and tenanted by larvæ having very long posterior legs. Half-a-dozen of these I took home and placed in a vessel having a quantity of river-sand in the bottom, in which a species of aquatic grass was growing. The larvæ got on well, increasing in size, as was evidenced by the slight additions made to their cases, and on 6th of May one fixed itself amongst the root-fibres of the grass, and by the 15th all had "spun up," either in the same way as the first, or on the sides of the vessel.

On the 29th March, I had obtained a few more cases, which were sent to my friend Mr. King of Glasgow. These, probably owing to the influence of a higher mean temperature, made much more rapid progress than mine, spinning up nearly a fortnight earlier; and on the 21st May he had the satisfaction of breeding ♂ and ♀ of *Beræodes minuta*. My first specimen, a ♂, was bred on 4th June, and since then several others have appeared.

Further, at the beginning of the present month, I procured a grass-root literally black with a multitude of cases, and numerous examples of the insect have been bred therefrom.

The larva agrees with those of the species belonging to the typical section of the *Leptoceridæ*, in having the posterior legs of great length, but in other points of structure it differs considerably. In a larva which I believe appertains to *Leptocerus aterrimus*, the head and first two thoracic segments are very narrow; *Beræodes*, on the other hand, has these segments robust and broad, almost as broad as the segments which follow. The first three segments (including the head) are chitinous, and beset with hairs: the head rather large, broadly ovate; pro-thorax very little broader than head, almost quadrate;

meso-thorax about same breadth as pro-thorax, transverse; meta-thorax soft. First abdominal segment with a large dorsal and smaller lateral protuberances;* the remaining segments cylindrical, gradually diminishing in size to the anal extremity; the terminal segment having two small processes bearing the usual hooklets, and provided with a few very long hairs. The respiratory filaments appear to be present only on the first three abdominal segments on the dorsal and ventral surfaces towards the sides, those on the back being turned inwards and almost meeting; they are flagellate in form, consisting of three to five long threads attached to a short and broad foot-stalk. The legs have a few very long hairs.

The larva is pale green: head above olivaceous-brown, with two pale lines, which converge, forming a sort of U, the eyes are very conspicuous, being placed in large pale patches; pronotum beautifully marked with thickly-set, small, round, dark brown or blackish dots, which become larger and less thickly set in the posterior part; mesonotum greenish-fuscous, with two darker points. Legs clear yellowish, darker about the joints. Anal hooklets also yellowish.

These larvæ are almost always found at the bottom, and they do not appear to feed on water-weeds: Mr. McLachlan suggests that, in all probability, their food consists of minute Desmids and Diatoms that must abound in the localities where they occur.

The cases are cylindrical tubes, 7 to 9 mm. in length, much curved and greatly attenuated to the tail-end, formed of fine sand-grains, covering an inner silken tube, and usually very black in colour. When about to change, the larva attaches the case by a silken band, spun round the mouth-end, to the root-fibres, &c., of aquatic weeds, and closes it with a somewhat convex membrane, in which there is an excentric slit. The nymph-state appears to extend over a period of about four weeks.

Carlisle, N.B.:

10th June, 1884.

[Dr. Brauer was so kind as to send me one of the original larvæ (with its case) obtained by Von Frauenfeld; it agrees in every respect with those found by Mr. Morton.—R. McL.]

* With regard to these protuberances, which are always visible in examples in alcohol, they would appear to be capable of withdrawal and inflation in the living larva. Mr. King directed my attention to this, and I subsequently confirmed it.

MIGRATION OF MOTHS.

BY JOHN CORDEAUX.

Mr. Gätke reports that at Heligoland, on the night from August 6th to 7th, 1883, wind S.E., there was a considerable flight of the silver-gamma moth (*Plusia gamma*), but nothing compared with the perfect "snow-storms" of this moth which passed in the autumn of 1882, all going west.

On October 11th, wind S.S.W., there was a large flight of *Hybernia defoliaria*, mixed with *Hybernia aurantiaria*; and also during the nights of the last week in October repeated flights of these moths.

With reference to the great flight of *Plusia gamma* across Heligoland in 1882, a notice of which appeared in the report on the Migration of Birds, 1882, p. 47, Mr. Charles Williams, of the Hanois Lighthouse, off Guernsey, states that the moths were observed there in June or July.

Mr. James Walsh, from the Fastnet Rock Lighthouse, eight miles from the coast of County Cork, states that on the night of November 2nd, 1883, the weather being hazy, there was a quantity of all species of birds from the N.E., but what was most remarkable was the number of large moths, which he can only compare to a heavy fall of snow.

Great Cotes, Ulceby, Lincolnshire :

June 4th, 1884.

[These notes are of extreme interest. Mr. Cordeaux is (as is well-known) Secretary of a Committee appointed by the British Association for the Advancement of Science, for the purpose of obtaining (under official sanction) reports on the migration of birds, in which the services of the various lighthouse keepers are largely enlisted. We think it highly desirable that entomology (as well as ornithology) should be represented on this Committee. The information obtained from systematic observation of the migration of nocturnal insects, as observed at lighthouses, could not fail to prove of the highest scientific value.—Eds.]

DESCRIPTION OF THE LARVA OF *HERBULA CESPITALIS*.

BY GEO. T. PORRITT, F.L.S.

A batch of eggs of *Herbula cespitalis*, received from Mr. W. H. B. Fletcher, of Worthing, on July 23rd last, deposited by a moth from the second brood, were globular and shining, the colour bright orange.

Four days later, on the 27th, they hatched, the newly-emerged larvæ being brownish-grey, and the large head black. They were placed on a growing plant of *Plantago lanceolata*, on which they spun a web quite at the base of the leaf, beneath which they rested in companies, and appeared to feed chiefly at night.

By the 4th of September, they had attained a length of about three-eighths of an inch, when I took down notes on them as follows:—Moderately stout, the polished head has the lobes rounded, it is narrower than the second segment, into which it can be partially withdrawn. Body cylindrical, and of almost uniform width throughout, tapering only slightly towards the extremities; segmental divisions deeply cut, and the prominent tubercles give the skin a rather rough appearance.

Ground-colour dull brownish-black, with a slight olive tinge; head and the horny second segment wainscot-brown, freckled with darker brown spots. Two dull, lead-coloured stripes, enclosing between them the very dark pulsating canal, form the dorsal band; there are no perceptible sub-dorsal lines, but a dingy ochreous stripe, of greater or lesser intensity in different specimens, extends along the spiracular region; tubercles and spiracles black. Ventral surface, legs, and prolegs, uniformly of the dull brownish-black of the dorsal area.

Eight days later, on the 12th, they were full-grown, when I again described them as follows:—Length, about five-eighths of an inch, and fairly stout in proportion; head and second segment horny and glossy, the former narrower than the latter, and has the lobes rounded; body cylindrical, and of uniform width, tapering a little towards the extremities; segmental divisions well-defined, but the skin has a smoother appearance than when last described, although the tubercles are still very conspicuous.

Ground-colour dull, smoky, brownish-black, the faint olive tint now being apparently quite lost; head and second segment wainscot-brown, freckled with darker brown spots. Two grey lines, enclosing between them the dark, smoky alimentary canal, form the dorsal stripe; there are no perceptible sub-dorsal lines, but a dingy ochreous stripe of greater or lesser intensity in different specimens, extends along the spiracular region; the polished tubercles black, finely but clearly encircled with grey; spiracles black, with very minute, almost imperceptible, white centres. Ventral surface and prolegs rather paler and browner than the dorsal area, the anterior-legs tipped with darker brown, and encircled with black at the bases.

They were still living in galleries of web, just above the roots of the food-plants, *Plantago lanceolata* and *P. major*, but, by September 21st, had nearly all spun up. The cocoons were fixed in corners, &c., of their cage; they were one-third to half-an-inch long, very toughly and compactly formed of closely-woven snow-white silk. The pupa is about one-third of an inch long, plump and glossy; the thorax, head, and wing-cases dark sienna-brown, abdominal divisions dark orange.

The imagós appeared during the second week of May last.

Huddersfield: *June 8th*, 1884.

LIST OF THE *DIPTERA* OF THE ISLAND OF MADEIRA, SO FAR AS
THEY ARE MENTIONED IN ENTOMOLOGICAL LITERATURE.

BY C. R. OSTEN-SACKEN.

The only strictly faunistic paper on Madeiran *Diptera* is the Dipterological portion of Wollaston's "Brief diagnostic characters of undescribed Madeiran insects" (*Annals and Mag. of Nat. Hist.*, 1858, pp. 113—117; with a plate by Westwood). It contains descriptions of 21 species believed to be new.

All other notices or descriptions of Madeiran *Diptera* have to be sought in the numerous works on descriptive entomology, among insects from other countries. I have compiled a list of all the species hitherto recorded as occurring in that island; owing to the difficulty of that kind of search, there may be some omissions, but they cannot be very numerous.

The list contains 53 species: 20 of these (indicated by *) are European species, for the most part very common; 2 species are common to Madeira and to the Canary Islands; 1 occurs all over Africa; 29 have been described from Madeira only, but among these 29 there are the 21 species described by Mr. Wollaston, which require a closer comparison with the European species, as many of them will probably be found identical. The same may be said of the species described by Mr. Thomson and Mr. Walker.

It appears, therefore, that the data in our possession are too meagre yet to allow of any conclusion about the affinities or the origin of the Dipterous Fauna of Madeira.*

* This List is published not by request of, but by permission of, the author. It was kindly compiled at my request for the use of a correspondent resident in Madeira, who is anxious to include a List of all recorded Madeiran Insects in the new edition of a book on the island generally. After so much care had been taken in bibliographical research, it seemed to me desirable that the results should also appear in some purely entomological publication.—R. MCLACHLAN.

Sciara cognata, Walk., List, &c., Brit. Mus., Dipt. I, p. 103, from Bogota, is stated by the same author (Ins. Saund., p. 419) to inhabit also Madeira, and to draw blood, like *Culicidæ*. N.B.—This statement is improbable.

**Simulium ornatum* (Meig.), Schiner, "Novara," p. 15.

Dilophus maderæ, Wollaston, Annals and Mag. of Nat. Hist., 1858, p. 115, tab. 5, fig. 1.

Scatopsæ tristis, id., l. c. fig. 2.

Culex longiareolatus (Macq., H. N. des Canaries, p. 99), Walker, List, &c., I, 6. N.B.—Also in the Canary Islands.

Chironomus pedestris, Wollast., l. c.

Dicranomyia maderensis, id., l. c. (*Limnobia*).

Geranomyia atlantica, id., l. c. (*Limnobia*).

Trimicra haligena, id., l. c. (*Limnobia*).

Limnophila contraria, id., l. c. (*Limnobia*).

Pachyrrhina brevipennis, id., l. c.; *lucida*, Schiner, l. c., p. 34.

Thereva nana, Wollast., l. c., fig. 3.

Tolmerus novarensis, Schiner, l. c., p. 191.

Machimus madeirensis, id., l. c., p. 192.

Paragus mundus, Wollast., l. c., fig. 4; **libialis* (Fallén), Schiner, l. c., p. 369.

**Syrirta pipiens* (Linné), id., l. c., p. 366.

**Syrphus gemellarii* (Rondani), id., l. c., p. 351; **seleniticus* (Meigen), id., l. c., p. 351; **pyrastri* (Linné), id., l. c., p. 351; **balteatus* (De Geer), Walker, List, &c., III, p. 582; Schiner, l. c., p. 353; **corollæ* (Fabr.), Schiner, l. c., p. 353; *egyptius* (Wiedemann), Loew, Dipt. Südaf., p. 306 (N.B.—Occurs in all Africa as far as the Cape); *Babyssa*, Walker, List, &c., III, p. 584; *brachypterus*, Thomson, Eugenie's Resa Ins., p. 496.

**Sphaerophoria strigata* (Stæger), Schiner, l. c., p. 347 (*Melithreptus*).

**Milesia crabroniformis* (Fabr.), Walker, l. c., p. 561.

Eristalis ustus, Wollast., l. c.; **tenax*, L., Schiner, l. c., p. 360.

**Musca domestica* (Linné), Schiner, l. c., p. 306.

Idia lunata (Fabr.), id., l. c., p. 309. N.B.—Besides Madeira, it has been found in the Canary Islands.

**Dasyphora pratorum* (Meig.), id., l. c., p. 304.

Sarcophaga æquipalpis, Thomson, l. c., p. 534.

Cynomyia madeirensis, Schiner, l. c., p. 312.

**Homalomyia canicularis* (Linné), id., l. c., p. 298.

**Heteromyza atricornis* (Meig.), id., l. c., p. 231.

Drosophila repleta, Wollast., l. c., fig. 7.

Tetanocera inclusa, id., l. c., fig. 5; (P) *Walkeri*, id., l. c., fig. 6.

Oscinis signata, id., l. c., fig. 8.

**Sepsis punctum* (Fabr.), Schiner, l. c., p. 261.

**Piophilæ casei* (Linné), id., l. c., p. 261.

Gymnopa clara, Wollast., l. c., fig. 9.

Acinia insularis, id., l. c.; *valida*, id., l. c.; *miranda*, id., l. c.

Ensina decisa, id., l. c.; *vacillans*, id., l. c.

**Tephritis amæna* (Frauenf.), Schiner, l. c., p. 269; *cosmia*, id., l. c., p. 269.

**Ceratitis capitata* (Wied.), Loew, die europ. Bohrfiegen, p. 123, tab. 26, fig. 1. N.B.—Attacks oranges, and occurs wherever they grow; the *Ceratitis citriperda*, McLeay, *hispanica*, De Brême, &c., are mere synonyms, or species based on individual varieties.

**Hippobosca equina* (Linné), Walker, *l. c.*, IV, p. 1140.

Heidelberg: June, 1884.

Thais Polyzena captured in England.—I wish to notice the capture, near Exeter, on May 27th, of a very good specimen of *Thais Polyzena*; it was taken by two lads near the city, and was brought to me in a match-box in the afternoon of the capture. It appeared as if it had not long emerged from the pupa state, as the hind-wings were not quite extended to the full development, but I managed to get them out on the setting board, and it now presents a respectable appearance. From the size of the body I presume it is a female.

I have not the least idea how the specimen came here, and I tried, by means of a notice of the specimen, and a question if any lady or gentleman had brought home any caterpillars of European insects, that perhaps this might have escaped, but I got no answer through the medium of the press or otherwise. I am not aware if this species has been taken before in England. Perhaps it would be as well to notice this in the Ent. Mo. Mag.—EDWARD PARFITT, Exeter: June 6th, 1884.

[Living pupæ of *Thais* are imported by many of our dealers in Natural History specimens, and can be purchased from them at a cheap rate. We have no doubt the specimen above alluded to was the produce of a pupa so imported. The larvæ feed on *Aristolochia*, of which we have only one species in England, and that is generally reputed not indigenous. Moreover, *Thais* is an essentially southern genus; so there is very little probability of it becoming naturalized here.—EDS.].

Sphinx pinastri at West Wickham.—On May 26th a young gentleman brought me (alive and unpinning) a splendid perfect specimen of *Sphinx pinastri* he had that morning taken off the palings of West Wickham Wood.—WILLIAM WATKINS, The Insectarium, Crystal Palace, S.E.: June 6th, 1884.

[The first portion of the editorial note appended to the notice concerning *Thais Polyzena* applies equally here.—EDS.].

Note on Vanessa cardui.—During the hot weather at the end of May, *V. cardui* suddenly put in an appearance in considerable numbers. I think May 23rd was the first day on which I saw them. They were all faded and worn, but much more numerous than last autumn. Whence did they come?—G. B. LONGSTAFF, Twicken, Morthoe, North Devon: June 6th, 1884.

[We think there is abundant evidence that a very considerable immigration of *Vanessa cardui* has occurred this season, but, at present, not in any way equalling that of 1879.—EDS.].

Development of imago in an ichneumonid pupa.—In the March number of the Magazine a correspondent mentions a curious instance of the above in the case of *Dicranura furcula*. A somewhat similar instance may be interesting. Two or three years ago, having dug a large number of pupæ, I broke open those that failed to emerge, so as, where possible, to see of what kind they were. In one, which was some species of *Taniocampa*, I found that the moth had apparently died, as so often happens, when just ready for emergence, but within the body was a parasite alive, also just ready to emerge. I have kept the specimen, and enclose it herewith.—A. F. GRIFFITH, Sandridge, St. Albans: April, 1884.

[This is a very curious instance of parasitism. The moth, apparently *Taniocampa stabilis*, had so far developed, that head, antennæ, proboscis, legs, thorax, and wings were perfect, but the abdomen was entirely occupied by the pupa of the parasite, a *Tachina*, leaving nothing between it and the pupa-skin of the moth except the skin and scales. The fly must have died when the pupa-moth was opened, as it has not spread its wings.—C. G. B.]

Coleoptera at Bromley.—During the months of June and July last year I captured in the evening in this neighbourhood the following *Coleoptera*, which I think are worth recording. *Homalota elegantula*, Bris., 1 specimen by the side of a wood. *H. exilis*, Er. ?, 1 specimen in the same locality; it appears to me to be identical with *exilis* in all respects except size, and in this respect it is nearly twice as large as that species. I sent the specimen to Dr. Sharp for his examination, and he returned it as being, in his opinion, too large for any of the *exilis* group; it must, therefore, wait till further specimens turn up to show if really distinct or only a large form of *exilis*. *Deleaster dichrous*, Gr., occasionally, flying. *Homalium iopterus*, Steph., and *pygmæum*, Pk., one or two specimens. *Scydmænus Sparshalli*, Den., by sweeping; *elongatulus*, Müll., ditto; *finetarius*, Th., I have found this year commonly in a hotbed. *Bythinus Curtisi*, Leach, and *Burrelli*, Den., as well as the commoner *bulbifer*, Reich., by sweeping. *Colon brunneum*, Latr., not rare, by sweeping. *Thalycra sericea*, Sturm, one specimen by sweeping, kindly determined for me by the Rev. W. W. Fowler; I had put it aside as a large *Epuræa*.—EDWARD SAUNDERS, St. Ann's, Mason's Hill, Bromley: May 15th, 1884.

Trichopteryx brevicornis, Mots., a species new to Britain.—Among some *Trichopterygida* sent me by Mr. T. R. Billups, I found a few species of a *Trichopteryx* which I at first sight referred to *T. atomaria*, but as it did not seem quite to agree with that species, I sent specimens to Mr. Matthews, who pronounces it to be *T. brevicornis*, Mots., a species new to the British list, and hitherto found only in Madeira.

It is slightly larger than *T. atomaria*, from which common species it may be distinguished by having the margins of the thorax bisinuate, by its longer elytra, which have a slightly fuscous tinge, and its shorter antennæ, which are nigro-piceous; the sculpture is also somewhat different. Mr. Billups tells me that he captured the specimens at Canning Town, West Ham Marshes, Essex, on November 29th, 1883, by shaking the bottom of a stack of radish-seed. The locality is the same which produced *Spercheus* a short time ago.—W. W. FOWLER, Lincoln: June 9th, 1884.

Carabus auratus in London.—I have to record the capture of a specimen of

Carabus auratus in a garden at Pentonville, London, N. I have shown the specimen to Mr. H. W. Bates and Mr. E. C. Rye, who suggest that it may have been introduced through the transport of vegetable substances from the continent; but I have since made enquiries, and find the nearest market garden is at least half-a-mile off.—H. W. SIMPSON, 2, Robert's Place, Bowling Green Lane, E.C.: May 24th, 1884.

[Our correspondent wrongly interprets the purport of the suggestion. There is no necessity for a "market garden." A French lettuce bought at the nearest greengrocer's shop would be sufficient. One London locality for this insect is the Borough Market.—EDS.].

Apion pomonæ and *Polydrusus undatus* in cop.—The note by Mr. Douglas, at p. 19, reminds me that I saw, beaten out by a friend, at Laughton Woods, near Lewes, on May 16th, a male *Apion pomonæ* in cop. with a female *Polydrusus undatus*. The insects remained in conjunction for more than four hours after their capture.—J. H. A. JENNER, 4, East Street, Lewes: June 16th, 1884.

Claviger foveolatus at Lewes.—This insect occurs sparingly in the nests of *Lasius flavus* under stones on the Downs near Lewes, only some half-dozen being usually procurable from any one nest. I was, therefore, much surprised last May, on turning over a stone, to see these insects congregated in masses. The nest was a small one, and the *Claviger* quite outnumbered the ants. I captured fully thirty specimens, while numbers escaped.—ID.

Hibernation of Cetonia aurata.—In wading through previous volumes of the Ent. Mo. Mag., I find a notice in the number for January, 1874, by Mr. John Scott recording the capture of a specimen of this species flying on the 15th October, 1873, with a question as to what could have caused such untimely flight. From this question I take it that it is not generally known that *Cetonia aurata* lives in hibernation through the winter, in proof of which I received during last month a specimen (alive), which had been captured in the thatch of an old house at Helmsley, near Leeds.—JOHN W. ELLIS, 101, Everton Road, Liverpool: May 26th, 1884.

[There can be little doubt that *Cetonia aurata* assumes the perfect state in the autumn, but ordinarily does not leave the cocoon until the following year. Occasionally, however, certain individuals come out in the autumn (especially in "bursts" of hot weather), and finding themselves overtaken by cold weather, either die, or seek convenient places for hibernation. cf. Ent. Mo. Mag., xi, p. 208.—EDS.].

Teredus nitidus, *F. Rhyncolus gracilis*, Rosen., &c., in Sherwood Forest.—The re-occurrence of *Teredus nitidus* in its original locality (Sherwood Forest), after lying *perdu* for so many years, seems sufficiently interesting to deserve record.

As the result of very hard work during a ten days' visit in last month (May 13th to 23rd), I managed to secure eight specimens of this rare beetle, all of them under bark of oak stumps, and in every case associated with *Dryocates villosus*. Whether or not any relationship exists between these two species I am unable to say from my own observation. I searched for larvæ of *Teredus* in the runs of *Dryocates*, but saw nothing except those of the latter beetle. All my specimens of the fully developed insect were taken from between the bark and the wood, their position being exactly that of a *Rhizophagus*.

My special object in visiting the Forest on this occasion was to hunt up *Eutheia clavata*; nor was I disappointed, a few examples of each sex being my reward. The original specimens occurred under oak bark; but on this visit I found them on both oak and birch—sub-cortical, of course.

In birch wood I found three specimens of *Rhyncolus gracilis*, and from an oak stump I took what I believe to be *Elater coccinatus*, the elongate, almost parallel, densely punctured thorax agreeing with the description of that rare species.

My other captures must be reserved for a future note; but I may say that I obtained two examples of *Ptenidium Gressneri* from a rotten birch stump, this making the second British locality for this species.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham: June 16th, 1884.

Solenopsis fugax, &c., in the Isle of Wight.—On April 12th, while collecting at the foot of the Culver Cliffe, near Sandown, I came across a nest of *Solenopsis fugax*: this, I believe, is the fourth nest of the species that has been found in Britain, two having been found by the late Mr. Frederick Smith, and two by myself, both in the same locality. I found individual specimens of this ant in one or two other places, not far from the spot where I discovered the nest, but still far enough away to prove that they belonged to other colonies. It was, however, the position of the nest which made the capture interesting. Sir John Lubbock, on page 78 of "Ants, Bees, and Wasps" (International Scientific Series), writes as follows:—"Another small species, *Solenopsis fugax*, which makes its chambers and galleries in the walls of the nests of the larger species, is the bitter enemy of its hosts. The latter cannot get at them, because they are too large to enter the galleries. The little *Solenopsis*, therefore, are quite safe, and, as it appears, make incursions into the nurseries of the larger ant, and carry off the larvæ as food. It is as if we had small dwarfs, about eighteen inches to two feet long, harbouring in the walls of our houses, and every now and then carrying off some of our children into their horrid dens!"

In the case of the nest that I found, the *Solenopsis* had had no occasion to make galleries; on pulling at a large stone to remove it from the side of the slope in which it was imbedded, the top, which fitted very closely, came off in my hand, and between it and the lower part the *Solenopsis* had formed its nest: owing to the position of the stone on a slope, the crack was in direct communication with the side of the hill in which it was imbedded, and here a large colony of *Formica fusca* had settled behind the stone; not one of the latter, apparently, could have got into the crack, but the *Solenopsis* had, of course, easy access to the *F. fusca*. The weather was rather cold, and the ants somewhat torpid, or I might have made further observations.

Solenopsis have certainly the power of getting through very small spaces. I shook the nest into a chip box, and enclosed this in two more, and wrapped these in two pieces of paper, but when I got home I found several in the outermost piece of paper, and the majority had escaped; one or two of the chip boxes were, certainly, not quite safe for very minute insects, but, at the same time, I thought that they could not have got through all.

There were a large number of other species of ants to be found in the same place. *Tetramorium caespitum* and *Formica cunicularia* seemed common, and the

ordinary species abounded ; setting aside the *Solenopsis*, however, my best find was two specimens of *Ponera contracta*, which I obtained by splitting the chalky base of the cliff. I also found this rarity at Ventnor, in one case under a stone below high water mark ; it is excessively sluggish, and I never found more than one in the same spot.—W. W. FOWLER, Lincoln : June 9th, 1884.

Curious habit of Osmia bicolor, Schk.—I was out collecting on the 28th ulto. on the slope of one of our hills, the morning was very bright and hot, and a brisk wind was blowing. Owing to the dry weather we had lately experienced, the vegetation was more scant than usual, but the *Helianthemum* and the *Lotus* were in bunches of bloom. I had been collecting bees for some days previously in the wood skirting this slope, and had met with *Osmia bicolor* ♀, but could not meet with the ♂, so thought I would try the dry slope of the hill. I had not been standing about there many minutes, when I saw the female of the bee coming towards me carrying in her jaws a bit of dry bent some four inches long, holding it in the middle, just exactly as an acrobat would carry a balancing pole to steady himself. As she came past me I secured her in my net with the bent in her mouth, which, when she found she was caught, she immediately dropped. Soon after this I saw another and another engaged in the same business ; they would settle down momentarily on the ground, seize hold of a short bent, and start away with it in the direction of the wood below. I saw this done at least twenty times by as many bees, and secured most of them. The moment I saw the first bee with the bent, I recollected I had observed the same habit last year, but I had not then so good an opportunity of watching the bees as now. I at first came to the conclusion that this had something to do with their nidification, but am now very doubtful on this point, as the same day I discovered this bee making its nidus in the shell of *Helix nemoralis*, and captured the bee in the whorl of the shell. I shall be very glad to know if this habit has been noticed by others, and, if so, what suggestions they may have to offer, as I fancy the habit must be peculiar as well as strange.—V. R. PERKINS, Wotton-under-Edge : June 6th, 1884.

Lecanium æsculi.—On sheltered paling under young horse-chestnut trees (*Æsculus*) I, this morning (shade-temperature 78° Fahr.), found a newly-emerged male of a *Lecanium*, which I take to be *L. æsculi*, Koll., *sec.* Signoret, Ess. Coch., p. 242. It agrees very well with Signoret's description and his figure, pl. xii, fig. 12 ; it also conforms to Curtis' figure of *Coccus aceris* (Brit. Ent., pl. 717), which Signoret says (*op. cit.*, p. 14) is truly *Lecanium aceris*, Schrank: Signoret, while admitting that *L. aceris*, auct., and *L. æsculi*, Koll., are very much alike, finds differences which he deems to be specific ; from paucity of material I can offer no opinion on the point ; certainly Signoret's figures of the two species, as understood by him, are not alike.

The scales on the sycamore and horse-chestnut are, sexually, very different in form and size, yet very similar on the two kinds of tree. I have often found them during winter and spring on the lowest and most sheltered young branches of these trees, where, doubtless, there is less chance of their being rubbed off by the casualties of winter than if placed on the higher branches, but I have always failed to rear the males from the scales removed and kept in glass tubes, and never till now captured or saw one of these rarities.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham : May 10th, 1884.

Hydroptila femoralis, Eaton, in Scotland.—At an excursion which the Natural History Society of Glasgow had to the hills above Port Glasgow on May 31st, I was fortunate enough to obtain a nice series of *Hydroptila femoralis*, Eaton, by beating the branches of Scotch firs, and sweeping the herbage along the edge of the burn in the Devol Glen. This species has not, as far as I am aware, been recorded from Scotland; it has been captured by the Rev. Mr. Eaton near Ashbourne, Derbyshire, in June.

It is to be regretted that so little is known about the distribution of these small caddis-flies, which is, no doubt, owing to the difficulty of collection, and also in getting the specimens named. I think that a large amount of the latter might be obviated by examining the specimens when they are freshly killed, as then the anal parts are very clear.—JAMES J. KING, 207, Sauchiehall Street, Glasgow: June 13th, 1884.

Obituary.

Henry Waring Kidd died at Godalming on March 23rd, aged 39, after three days' illness, according to a recent death-roll in the "Times." Readers of the first eight volumes of this Magazine will remember the numerous and valuable observations by H. W. Kidd on galls and gall-insects. But, probably, very few were aware of the physical disadvantages under which the writer of those notes laboured. A helpless paralytic cripple from birth, utterly without the use of his legs, and almost in an equal degree without the use of his hands, he was a striking example of the consolation derived from a taste for Natural History in the face of such terrible odds.

H. W. Kidd was the son of Dr. Waring Kidd, of Godalming, who, it was long believed, wrote in the old "Entomological Magazine," and in the "Entomologist" of 1840—42, under the pseudonym "Rusticus," and was presumed to be the author of the charmingly written "Letters of 'Rusticus';" but it was afterwards authoritatively announced that Dr. Kidd only furnished some of the materials.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY opened their New Rooms at 60, Blackman Street, Borough, S.E., on June 5th, at 8 p.m., with an Exhibition Meeting, which was largely attended, in spite of the inclemency of the weather. The exhibits were as follows:—

Mr. T. R. Billups, 10 drawers of *Coleoptera*, 1 of *Diptera*, 4 of *Hymenoptera*, 1 of *Hemiptera*, 1 of *Arachnida*, 2 of *Orthoptera*, and 3 of *Mollusca*; also the life-history of *Tephritis onopordinis*, the destructive celery-fly.

Mr. Wellman, 2 drawers of *Geometra*, and a series of *Fidonia atomaria*, which included a fine black variety.

Mr. Elisha, 2 drawers of *Tinea*.

Mr. Adkin, 1 draw of *Geometra*, 1 of *Cuspidates*, and a series of *Nola centonalis* and *Boletobia fuliginaria*.

Mr. J. T. Williams, 6 bred specimens of *Boletobia fuliginaria*.

Mr. Coverdale, a series of *Lepidoptera*, illustrating his new method of mounting without pinning.

The President (Mr. W. West, L.D.S.), life-histories of 24 species of British *Lepidoptera*.

Mr. West, Greenwich, a collection of leaves infested with *Coleophora*, pupæ of British *Lepidoptera*, and *Actias Selene*, an exotic silk-producer.

Mr. Hall, 1 case of *Lycænidæ*.

Mr. Bliss, 5 drawers of Exotic *Lepidoptera*.

Mr. C. H. Williams, life-histories of 4 species of *Lepidoptera*.

Mr. Vincent, case of *Neuroptera* and *Trichoptera*.

Mr. Eley, a small collection of *Coleoptera*.

The Society's Typical Collection of British Insects was on view.

An interesting feature was a variety of Entomological and other objects exhibited under microscopes.

Mr. W. A. Pearce exhibited mounted Botanical specimens. Mr. Step water-colour sketches of British Fungi. Mr. A. E. Pearce water-colour studies of British and foreign plants.

WALTER A. PEARCE, Honorary Secretary.

[The modest official report scarcely does justice to the excellence and importance of this exhibition. All Orders of insects were well represented, and the condition of the specimens left nothing to be desired from a purely British point of view. Moreover, the recent enlargement of the scope of the Society, which permits it to include Natural History generally, had a decidedly beneficial effect, which will no doubt be still more apparent on future occasions.—Eds.].

ENTOMOLOGICAL SOCIETY OF LONDON: 4th June, 1884.—J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

Captain Richard Holt, of Wandsworth, and F. de V. Kanes, Esq., of Kingstown, Ireland, were elected Members.

The Secretary read a letter from the President of the Society of Natural Sciences of Philadelphia inviting Members of the Society to the Congress to be held there this ensuing autumn.

Mr. Coverdale exhibited specimens of *Micro* (and other) *Lepidoptera*, illustrating his method of mounting on pith without pinning.

Mr. McLachlan exhibited galls on the roots of various species of *Cattleya*, supposed to be produced by *Isosoma orchidearum*, Westwood (*vide* report of previous Meeting, *ante* p. 24). He also exhibited the shell-like larva-cases from East Africa, described in this Vol., pp. 1, 2. And nearly 100 microscopic slides of British *Aphides*, prepared by the late Francis Walker in 1847, which had been presented to him by Mr. P. Hubert Desvignes, son of the late Mr. Peter Desvignes, who was one of the original Members of the Society: these slides evinced great care and skill in microscopic mounting, considering that nearly 40 years had elapsed since they were prepared.

Mr. Billups exhibited a south European ant (*Cremastogaster scutellaris*) caught at Greenwich, and suggested that it might have been imported in cork.

Mr. W. C. Boyd exhibited strawberry plants from his garden at Cheshunt, curiously deformed, which he thought might be due to the action of some insect or *Acarus*, but of which no trace could be found. The flowers were wholly phylloid, and the stems much shortened and flattened, so as to assume the character of the condition known in teratological botany as "fasciation."

Mr. F. Moore communicated Description of new species of Indian Heterocerous *Lepidoptera*, chiefly in the collection of the British Museum.

Mr. W. H. Patton communicated notes on the classification and synonymy of Fig-insects, in which he differed somewhat from the conclusions arrived at by the late Sir S. S. Saunders.

NOTES ON BRITISH *TORTRICES*.

BY CHAS. G. BARRETT.

(Continued from Vol. xx, p. 270).

Tortrix Branderiana, L.—Larva stout, each segment thickened, especially the third and fourth, and tapering thence to the anal segment. Colour dirty pale green, spots minute, black, with small hairs. Head and plates black, the dorsal plate having in front a white collar. Pupa blackish. Feeding between united leaves of aspen. The larva described—the only one that I have seen—was sent by Mr. Hodgkinson of Preston, who reared others. This one did not produce the perfect insect.

Zeller describes this larva: “slender, very active, when young nearly black, with raised dots of the same colour bearing hairs; when full-grown, head, dorsal plate and claw-feet black, the dorsal bordered in front with white. In May in a folded leaf of *Populus tremula*.”

Peronea mixtana, Hüb.—Larva active, cylindrical, rather slender, yellowish-green with green dorsal vessel. Head yellowish-brown, plates bright green. On *Calluna vulgaris* in the beginning of August, drawing together the terminal shoots and forming a chamber among them in which it lives, coming out—apparently at night—to feed on the tips. Pupa dark brown, in a slight cocoon in the same place. The moths emerged early in November.

These larvæ were found in Scotland by my old friend Dr. Algernon Chapman, who very kindly forwarded them to me.

Teras contaminana, Hüb.—Sluggish and rather plump, slightly flattened, when young pale green with head and dorsal plate black, when older the head becomes brown, and when full-grown the body becomes almost yellowish, the head pale brown, and the dorsal plate yellowish, anal plate green at all ages.

Very plentiful in June drawing together leaves and terminal shoots of hawthorn and blackthorn, and feeding between them. Becoming a brown pupa in the same place.

Zeller says it feeds on wild apple, plum, pear, sloe, oak, and mountain ash.

Dictyopteryx Bergmanniana, L.—Larva cylindrical, when young pale greenish grey, paler beneath, sometimes even bluish when very young, head and both plates black and shining. At this time it commonly folds together a leaflet of rose and lives between. When older it often becomes yellow, sometimes very bright yellow, and the anal

plate becomes yellow with a brown spot. Feeding, in night-time, in shoots and young leaves of all sorts of roses, and, sometimes, even on dewberry (*Rubus cæsius*) drawing the leaves together, or even, in small roses, twisting them over like a hood. This latter is particularly observable in *Rosa spinosissima*. The pupa state is assumed among the twisted leaves, and the moth emerges in myriads at the end of June.

Brachytænia semifasciana, Haw.—Larva rather plump and slightly flattened, pea-green, with darker green dorsal and sub-dorsal lines, sometimes with a whitish appearance of efflorescence and whitish segmental divisions. Head yellowish-green, plates both green. On *Salix capræa* and other sallows in May and June, drawing together terminal leaves. Pupa blackish, in a cocoon of white silk between leaves, moth emerging at the end of June and in July.

Penthina betuleтана, Haw.—Larva cylindrical, smooth, shining and rather plump but active. When young pale yellowish with broad grey-green dorsal vessel. Spots black, but very minute, hairs transparent. Head and plates jet-black, dorsal plate narrow and placed far back on the second segment.

When full-fed rather attenuated at each extremity. Bright green with yellow folds between the segments, the raised spots distinct and yellow, and having a narrow dorsal, and two sub-dorsal lines grey-green. Head small, yellowish-green, plates pale green.

In May and June in screwed-up leaves of birch. Found on Moncrieffe Hill, Perthshire, by the late Sir Thomas Moncrieffe.

Penthina variegana, Hüb. (*cynosbatella*, L.)—Larva cylindrical, rather sluggish, very dark green, spots black, very small. Head and plates black. On hawthorn and blackthorn, drawing together a leaf or two with silk in May and June. Pupa black, in the same place; moth emerging at the end of June.

Penthina pruniana, Hüb.—Larva sluggish, short and plump, bright green, spots distinct, and shining black with short hairs. Head and dorsal plate shining black, anal plate either black or green. On blackthorn (*Prunus spinosa*), drawing together the terminal shoots and eating out their hearts, feeding from April to June. When full-fed the larva leaves the shoot and twists or folds a leaf (often of some different species of plant) into a small neat chamber, in which it changes to a black pupa, the moth emerging in June or July.

Treitschke says that it feeds in the different species of *Prunus*, *Cratægus*, and *Rosa*, but this seems doubtful.

Penthina dimidiana, Tr.—Larva short, stout, and wrinkled, slightly tapering at the extremities, but otherwise cylindrical, dark smoky-grey or smoky-black, spots large, raised, jet-black with rather long bristles. Head, plates, and feet shining black. Feeding in August and September in the tops of *Myrica gale* (bog myrtle) joining together the edges of the leaves so as to make a round, somewhat balloon-shaped habitation, eating out the heart of the shoot, and gnawing the upper surface of the joined leaves. When full-fed, leaving the habitation to spin up among fallen leaves, when it becomes a black pupa, and lies in that state through the winter, the moth emerging in May. Found in Scotland, and, also, near Keswick, Cumberland, by Dr. Algernon Chapman, who kindly spent some of his very limited time in collecting them for me. His remarks on it are interesting:—"It is a short, thick, stumpy, inactive, nearly black larva, and feeds from August to October on *Myrica*. It selects a shoot that has done growing for the season, and fastens together the leaves at the top into a very spacious dome-topped nest, by joining them edge to edge, and eats the inner surface of the leaves, filling the bottom of the nest with frass. The larva of *Melanippe hastata* has a precisely similar habit on the same plant, and, till you open the nest, you cannot say which you have, except that there are fifty *dimidiana* to one *hastata*. I have seen one or more to every plant of *Myrica* on hundreds of acres. The young larva makes a very imperfect balloon, it is only in the last skin but one that it makes the complete article."

Hofmann's description of the larva (from Gärtner) must refer to some other species:—"yellowish-green with dark grey warts, head yellow, dorsal plate (neckshield) yellow-green spotted with black, in August on *birch* and *alder*;"—perhaps *sororculana* (*prælongana*).

Hypermercia cruciana, L.—Larva active, rather flattened, pale yellow, with indistinct greenish dorsal vessel. Spots invisible. Head light brown, plates yellow. Plentiful in the young shoots of *sallow*, drawing together the terminal leaves in May and June. Pupa light brown, in a snug little oval cocoon in a fold of a dead leaf. Moth emerging early in July.

Ditula angustiorana, Haw.—Larva cylindrical, slender, active, pale yellowish tinged with reddish behind, and with greenish dorsal region. Head and dorsal plate light brown, both darker on the posterior edge. Pupa pale brown. The larva from which this description was taken, was sent me by Mr. Buckler, who found it feeding in a top of

Mercurialis perennis (dog's mercury) drawing together the tips of the leaves in April. It fed up on this plant, and spun up among rubbish, the moth emerging early in July.

This species is rare—or absent—in Pembrokeshire, but from knowledge of it in other districts, I have no doubt it is extremely polyphagous. I have known it to feed freely on *yew*.

Carpocapsa juliana, Curt.—Larva sluggish, cylindrical, rather plump and wrinkled. Whitish in colour, and having a crossbar of pale brown on the back of the 4th to the 12th segments. Spots prominent, shining, dark red, with minute hairs. Head pale brown, dorsal-plate whitish, with a necklace of black markings forming a large crescent round its posterior edge. Anal-plate black in front, shaded off behind.

Found feeding in the fruit of the edible chestnut in Greenwich Park, by Mr. W. West, and reared by him. I failed to rear those he sent to me.

Stigmonota nitidana, Fab. (*redimitana*, Gn.).—Young larva cylindrical, not active, semi-transparent, dirty white, spots black, large and very distinct, dorsal vessel dark grey and very visible, and with the assistance of the black dots forming a zigzag, or chain-like, series of markings along the dorsal region. Head, plates, and feet jet-black.

When full-grown, active, slender, cylindrical, with rather wrinkled segments, semi-transparent, pale yellow with the dorsal vessel grey or greenish. Hairs rather long. Head and plates bright yellow. Anal legs rather extended.

On oak, generally on low boughs, or oak bushes under the trees. Living between two leaves, the surfaces of which it joins together with silk, and making a tubular habitation of silk between them with a good deal of loose web. Gnawing the inner surfaces of both leaves, and so blotching them extensively. Moving readily to a fresh pair of leaves which it joins in the same way. When full fed, forming a small tough egg-shaped cocoon covered with frass, between the leaves, but not in the silken tube. Feeding from June to September; passing the winter in the cocoon attached to the leaves, where it turns to a pale olive-brown pupa, which is forced partly out of the cocoon when the moth emerges in the succeeding May or June.

I found many larvæ in Canaston wood, and Dr. Wood sent me others from Ledbury.

Stigmonota Weirana, Dougl.—Larva rather flattened, with deeply

divided segments. Dull white with dark green dorsal vessel; spots invisible, hairs rather long, white. Head pale brown, plates faintly tinged with brown. Pupa light brown, with yellowish wing-sheaths. Feeding between two leaves of beech, which it unites by silken ties, gnawing the inner surface of both leaves, and leaving the outside skins. There seems to be no silken tube, and the frass is scattered all about between the leaves. The cocoon is small and tough, egg-shaped, covered with frass, and attached to the habitation. The pupa is partly forced out when the moth emerges. These larvæ were sent me by Dr. Wood of Tarrington, Ledbury, early in September, the moths emerged in the succeeding June.

Grapholitha trimaculana, Don.—Larva rather stout, and slightly flattened, when young greenish, afterwards pale yellow; dorsal region pinkish or brownish, spots minute, black, head and broad dorsal plate shining jet-black, anal plate green.

On elm, between folded or drawn-together leaves, apparently preferring trees to bushes; feeding in May and June. Pupa pale yellowish brown. Moth emerging at the end of June.

Grapholitha geminana, Steph.—Larva cylindrical, active, dirty pale yellowish, strongly tinged with greyish-green in the back, and showing the dark dorsal vessel. Head black-brown, dorsal plate black, anal plate green, spots shining, but hardly visible. Feeds in June on *Vaccinium myrtillus*, uniting the leaves and joining them on to other leaves, and even to other twigs, so that the twisted, contorted appearance of the tops of the *Vaccinium* is very noticeable. It spins up, and becomes a pupa, between the leaves, and emerges in July, and is common in most places in which its food-plant is plentiful.

Hofmann says that he has found it in great abundance on *Erica carnea*, on the mountains.

Grapholitha navana, H.—The larva of this species is very similar to that of *geminana*, but seems always to have a black head. It is very partial to holly, feeding in a very closely spun-up shoot of that plant, and doubtless on other shrubs, feeding and emerging rather later than *geminana*.

Von Heyden's description of the larva is—"somewhat transparent, whitish-grey, with isolated pale bristles. Head heart-shaped, shining black, dorsal plate with large dots at the back and sides. In spring on fruit trees, and *Rhamnus*."

NOTES ON THE ENTOMOLOGY OF PORTUGAL.

VIII.—TRICHOPTERA.

BY R. McLACHLAN, F.R.S., &c.

In October, 1880 (*cf.* Ent. Mo. Mag., xvii, pp. 103—108), I published a List of the *Pseudo-Neuroptera* in part, and of the *Neuroptera-Planipennia*, collected by my friend the Rev. A. E. Eaton during his tour in Portugal in 1880. It was then stated that the *Trichoptera* were so rich in new forms that it might be impossible for them to appear in this series of notes in the first instance. I did not then wish to indicate a long series of species with no specific names, and I have a repugnance to the publication of names without descriptions. The time has arrived, however, when there is no necessity for either of these scruples, because all the new species appear in the "First Additional Supplement" to my Revision and Synopsis of European *Trichoptera*, recently published.

The *Trichoptera* certainly form the most important part of the collections made by Mr. Eaton during his tour. He collected over 65 species, of which 27 were new (excluding a few not described for want of sufficient materials), and others very imperfectly known. And all this was the work of an Englishman in little more than two months, travelling alone in a country of which the language of the inhabitants was strange to him. The species collected can only form a tithe of those that exist.

A remarkable feature is the fact that only one species of *Limnophilidæ* was found. I think this may be accounted for in two ways. Firstly, Mr. Eaton probably avoided (as unhealthy) the marshy districts in which many species of this Family delight; secondly, it was probably too early in the year for those species of it that inhabit the high mountains. As some proof of this latter, it may be stated that he saw the larvæ of some species in great abundance in a lake in the Estrella, at an elevation of over 5000 feet. Moreover, the Family is essentially Palearctic and Nearctic, scarcely occurring within the northern tropical region (re-appearing in a remarkable manner, in small numbers in Chili and adjoining districts). Over 60 species are known to inhabit Finland, over 50 have been found in Britain. But a gradual diminution occurs as we go south, excepting in the Alps of Central Europe, where *altitude* supplies the deficiency in conditions that would otherwise be occasioned by *latitude*.

Unless we should witness the unexpected advent of a native

student of *Trichoptera*, I fear it will be long before another so important a contribution to this portion of the Portuguese insect-fauna can appear.

I have indicated by an asterisk (*) those species that also occur in Britain.

LIMNOPHILIDÆ.

Catadice estrellensis, McLach. (*n. sp.*).—South of Sabugueiro, 4092 ft., 5th June, 3 ♂, 3 ♀. The second species of this *Drusus*-group genus. Apparently quite distinct from the Spanish *C. Bolivari*, McLach., which was described from a single badly-preserved ♂.

SERICOSTOMATIDÆ.

Sericostoma bæticum, Ed. Pict.—About 25 examples from the slopes of Picota and other localities near Monchique in May, and near Cea, Villa Real, and Salamonde, in June, at elevations ranging from 1400 to 2000 ft. These shew considerable variation in the form of the penis-sheaths, apparently due to local influences.

Schizopelex festiva, Ramb.—A long series from near Villa Real, 24th and 25th June. Although from one locality, only a few examples show the typical markings on the anterior-wings; in others they are nearly obsolete; and in the majority these wings are uniformly yellow, suggestive of *S. granja*, Ed. Pict., which should, however, be structurally distinct, according to the description.

Micrasema morosum, McLach. ?—I refer here, provisionally, about 15 examples collected near Cea, São Romão, Cintra, and Villa Real. The species of *Micrasema* are amongst the most difficult to define. The types of *M. morosum* were from Carinthia.

Micrasema mæstum, Hagen.—Originally described from 1 ♀ from Spain. Eaton collected a series near Monchique, on the slopes of Foia, and near Villa Real and Ruivães, that in all probability belong here.

Helicopsyche lusitanica, McLach. (*n. sp.*).—Six ♂ from the slopes of Picota, near Monchique. All in alcohol (excepting one damaged example), and with no possibility of defining the colour of pubescence, &c. Allied to the Italian *H. sperata*, McLach., but apparently quite distinct. Mr. Eaton did not discover the larvæ, but it is just possible that the cases from Portugal to which Hagen (Stett. Zeit., 1864, p. 130) applied the name "*sericea*," may belong here. I have already

stated that the British Museum possesses *Helicopsyche*-cases from near Oporto.

N.B.—Two ♀ from near Cea are smaller, and probably represent a second Portuguese species; they are in bad condition.

The distribution of *Helicopsyche* in Europe is gradually developing.

Lepidostoma fimbriatum, Ed. Pict.—A ♂ from the slopes of Foia, near Monchique, and a ♀ from near Villa Real, may be referred here. The species is probably distinct from the common *L. hirtum*, F., but if so, the characters are slight.

LEPTOCERIDÆ.

Beræa dira, McLach.—A ♂ from the slopes of Foia agrees sufficiently with the other known examples (from Turkestan and Fiume) to warrant its identification therewith. A ♀ from Cea is doubtful (so also is another ♀ from near Monchique, collected by the late Camille Van Volxem).

* *Leptocerus albo-guttatus*, Hagen.—Near Cintra, 5 ♂, 31st May.

Leptocerus inæqualis, McLach. (*n. sp.*).—Near Almodovar and São Barnabe, 9 ♂, 1 ♀, 8th and 12th May. Of the Group of *L. cinereus*; with peculiar asymmetric anal structure in the ♂.

* *Leptocerus cinereus*, Curt.—This wide-spread species appears to be replaced by others allied thereto in the South of Portugal, but one ♂ (not in good condition) from between Cintra and Lisbon does not seem to differ structurally from the typical condition.

Leptocerus Braueri, Ed. Pict.—Near Monchique, 18th May, 2 ♂. I formerly referred the Spanish types of this as only a form of the protean *L. cinereus*, but further examination of one of them in comparison with the Portuguese examples, convinces me that *L. Braueri* is a distinct species.

Leptocerus cuneorum, McLach. (*n. sp.*).—Near Almodovar and São Marcos da Serra, in May, 7 ♂, 2 ♀. A good species of the *cinereus* Group, but very much resembling in colour the pale variety of *L. aterrimus*, Steph.

* *Mystacides azurea*, L.—At Cintra, end of April, and at Villa Nova de Gaia, near Oporto, 20th June. Those from the former locality are as large as *M. nigra*.

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 Pocket Folding Net, 1 Brass Net, 3/6 & 4/6 Malacca Net, 25 x 18, for Hunting, 2/6, 0/1
 Telescope Net, 6/; 2/6, 3/6, 4/6, 5/6 Self-acting do. 8/1
 Large Box, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Boxed Killing Bottle, 1/6; 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 1/10, 1/11, 1/12, 1/13, 1/14, 1/15, 1/16, 1/17, 1/18, 1/19, 1/20, 1/21, 1/22, 1/23, 1/24, 1/25, 1/26, 1/27, 1/28, 1/29, 1/30, 1/31, 1/32, 1/33, 1/34, 1/35, 1/36, 1/37, 1/38, 1/39, 1/40, 1/41, 1/42, 1/43, 1/44, 1/45, 1/46, 1/47, 1/48, 1/49, 1/50, 1/51, 1/52, 1/53, 1/54, 1/55, 1/56, 1/57, 1/58, 1/59, 1/60, 1/61, 1/62, 1/63, 1/64, 1/65, 1/66, 1/67, 1/68, 1/69, 1/70, 1/71, 1/72, 1/73, 1/74, 1/75, 1/76, 1/77, 1/78, 1/79, 1/80, 1/81, 1/82, 1/83, 1/84, 1/85, 1/86, 1/87, 1/88, 1/89, 1/90, 1/91, 1/92, 1/93, 1/94, 1/95, 1/96, 1/97, 1/98, 1/99, 1/100, 1/101, 1/102, 1/103, 1/104, 1/105, 1/106, 1/107, 1/108, 1/109, 1/110, 1/111, 1/112, 1/113, 1/114, 1/115, 1/116, 1/117, 1/118, 1/119, 1/120, 1/121, 1/122, 1/123, 1/124, 1/125, 1/126, 1/127, 1/128, 1/129, 1/130, 1/131, 1/132, 1/133, 1/134, 1/135, 1/136, 1/137, 1/138, 1/139, 1/140, 1/141, 1/142, 1/143, 1/144, 1/145, 1/146, 1/147, 1/148, 1/149, 1/150, 1/151, 1/152, 1/153, 1/154, 1/155, 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1/871, 1/872, 1/873, 1/874, 1/875, 1/876, 1/877, 1/878, 1/879, 1/880, 1/881, 1/882, 1/883, 1/884, 1/885, 1/886, 1/887, 1/888, 1/889, 1/890, 1/891, 1/892, 1/893, 1/894, 1/895, 1/896, 1/897, 1/898, 1/899, 1/900, 1/901, 1/902, 1/903, 1/904, 1/905, 1/906, 1/907, 1/908, 1/909, 1/910, 1/911, 1/912, 1/913, 1/914, 1/915, 1/916, 1/917, 1/918, 1/919, 1/920, 1/921, 1/922, 1/923, 1/924, 1/925, 1/926, 1/927, 1/928, 1/929, 1/930, 1/931, 1/932, 1/933, 1/934, 1/935, 1/936, 1/937, 1/938, 1/939, 1/940, 1/941, 1/942, 1/943, 1/944, 1/945, 1/946, 1/947, 1/948, 1/949, 1/950, 1/951, 1/952, 1/953, 1/954, 1/955, 1/956, 1/957, 1/958, 1/959, 1/960, 1/961, 1/962, 1/963, 1/964, 1/965, 1/966, 1/967, 1/968, 1/969, 1/970, 1/971, 1/972, 1/973, 1/974, 1/975, 1/976, 1/977, 1/978, 1/979, 1/980, 1/981, 1/982, 1/983, 1/984, 1/985, 1/986, 1/987, 1/988, 1/989, 1/990, 1/991, 1/992, 1/993, 1/994, 1/995, 1/996, 1/997, 1/998, 1/999, 1/1000

Boxed Killing Bottle, 1/6; 1/2, 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 1/10, 1/11, 1/12, 1/13, 1/14, 1/15, 1/16, 1/17, 1/18, 1/19, 1/20, 1/21, 1/

Frisonodes ochreella (Rambur), McLach.—Coimbra, 2nd June, and Ponte de Morcellos, 12th June, and near Villa Real, 24th June; 6 ♂, 6 ♀. Rambur's localities for this species are Paris and Le Mans. I have seen no French examples other than his types (in bad condition).†

Erotesis (?) *melanella*, McLach. (*n. sp.*).—São Barnabé, 12th May, 1884, 6 ♀. The smallest species of typical European *Leptoceridae* known to me. Somewhat resembling *Adicella filicornis*, Pict., in its coloration. In structure scarcely typical of either *Erotesis* or *Adicella*.

Adicella reducta, McLach.—Monchique, Cea, Villa Real, and other localities. Larger than British examples, as is usually the case in those from the Continent.

Ecetis testacea, Curtis.—Alferce, 22nd May, and between Coimbra and São Antonio, 3rd June. This pretty and characteristic species has a wide continental distribution.

Metodes lusitanica, McLach. (*n. sp.*).—Near São Marcos da Serra, and Ponte de Morcellos, 17 ♂, in June. A species with out-
resemblance to *S. tineiformis*, Curt.; the anal structure very ordinary.

Calamocerases Volxemi, McLach.—Described by me originally from badly preserved females, collected by the late Camille Van Volxem at Coimbra and Alte. Eaton found 10 examples, mostly ♂, in April, May, and June, near Cintra, Monchique, São Marcos da Serra, and Villa Real. The insect somewhat resembles a very large *Goëra pilosa* in good condition. The genus is (at present) the sole European member of a Section otherwise exotic, and chiefly tropical.

HYDROPSYCHIDÆ.

Hydropsyche lobata, McLach. (*n. sp.*).—A pair from the Mondego and Ponte de Morcellos. A near ally of *H. pellucidula*, Curt., but apparently distinct in structural characters.

Hydropsyche instabilis, Curtis.—Cintra, Villa Real, and Salamonde. Very wide distribution in Europe.

Hydropsyche exocellata, Dufour.—Ponte de Morcellos, 12th June, 1884, a pair.

Since this remark was printed, I have captured (13th July, 1884) *T. ochreella* in some abundance in a little river close to Dijon (Côte d'Or), France.—R. McL.

- * *Hydropsyche lepida*, Pict.—Ponte de Morcellos, 12th June.

Hydropsyche (?) *tibialis*, McLach. (*n. sp.*).—One damaged ♀ from near São Romão, 4100 ft., 5th June.

Possibly not a true *Hydropsyche*; differing in the form and proportions of the joints of the maxillary palpi, and in the undilated intermediate tibiae and tarsi of the ♀. A very interesting insect, the acquisition of the ♂ of which is desirable.

- * *Diplectrona felix*, McLach.—Monchique, slopes of Foia, Villa Real, and Salamonde, May and June.

Philopotamus perversus, McLach. (*n. sp.*).—Villa Real and Buivães, end of June. Might be considered a melanic variety of *Ph. montanus*, in external characters. A distinct difference therefrom exists in the inner anal structure.

- * *Philopotamus montanus*, Donovan.—Villa Real, four examples. Scarcely typical.

Philopotamus amphilectus, McLach. (*n. sp.*).—The Estrella (Cea, &c.). A large handsome species, with the external anal structure of *montanus*, and the inner structure of *variegatus*; on the whole more allied to the latter. A solitary ♂ from Villa Real (probably the more typical), differs in some slight colour-characters.

Dolophilus corvinus, McLach. (*n. sp.*).—A pair from São Romão, 9th June. Allied to *D. pullus*, McLach., but with very decided structural differences.

- * *Wormaldia mediana*, McLach.—Cea, Ponte de Morcellos and Villa Real, 11th, 14th, and 21st June, 8 examples. Slightly doubtful, being darker than the typical form, but hardly to be referred to *W. subnigra*.

Two ♂ examples of this genus, from Villa Real and Salamonde respectively, remain undetermined.

Plectrocnemia inflata, McLach. (*n. sp.*).—One ♂ from near Villa Real, 1280 ft., 24th June. Allied to *P. geniculata*, McLach.

Plectrocnemia latibilis, McLach.—One ♂ from near Villa Real, 22nd June. The types were from the French Pyrenees.

- * *Polycentropus Kingi*, McLach.—I am unable to separate examples from the slopes of Foia, near Alferce, Cea, and Villa Real, from typical Scotch specimens; they are rather larger. As I saw an

example from the island of Sardinia that also appeared to belong here, it is possible the species has a wide distribution, but is overlooked on account of the general resemblance all the species of *Polycentropus* bear to each other.

Polycentropus corniger, McLach. (*n. sp.*).—Near Villa Real, eight examples, 21st and 23rd June. I have also seen this species from the French Pyrenees.

Polycentropus telifer, McLach. (*n. sp.*).—Near Cintra, and on the Corgo near Villa Real, 4 ♂. A species with peculiar elongate inferior appendages.

Cyrnus cintranus, McLach. (*n. sp.*).—Cintra, 26th to 30th April, 3 ♂, 2 ♀, and a somewhat doubtful ♀ from near Monchique, 19th May. Closely allied to *C. trimaculatus*, Curt., but much larger and apparently distinct.

Ecnomus deceptor, McLach. (*n. sp.*).—Ponte de Morcellos, 12th June, 1 ♂. I have also captured it in Belgium. Closely allied to *E. tenellus*, Ramb., but very distinct in the anal parts of the ♂.

* *Tinodes wæneri*, L.—Near Cintra, end of April and beginning of May, and Almodovar, 6th May. The examples equal in size the largest of those from Britain.

* *Tinodes assimilis*, McLach.—Cintra, 27th April, Monchique, 18th and 19th May, near Cea, 11th June, near Oporto, 18th and 20th June. Common.

Tinodes maculicornis, Pict.—Near Cintra, in April, May, and June. Common.

Tinodes fædella, McLach. (*n. sp.*).—The Estrella, near São Romão, 2450 ft., near Cea, 1800 ft., near Salamonde, in June; 22 examples. The smallest species known to me, and belonging to the *black* Group.

Lyte auripilis, McLach. (*n. sp.*).—Near Monchique and slopes of Foia, in May; 3 ♂. Somewhat allied to *L. phæopa*, Steph. Remarkable for the mixture of golden in the ordinary dark pubescence of the anterior-wings.

Lyte reducta, Hagen.—A ♂ from near Cintra, 31st May, probably belongs here.

* *Psychomyia pusilla*, F.?—I refer here, with doubt, several examples from Oporto, Villa Real, Ruivães, and Ponte de Morcellos.

Psychomyia ctenophora, McLach. (*n. sp.*).—Ponte de Morcellos 12th June, 3 ♂, 4 ♀. Remarkable for a peculiar comb-like structure in the superior appendages of the ♂, whence the name is derived.

RHYACOPHILIDÆ.

* *Chimarrha marginata*, L.—Near Monchique, 18th May, Ponte de Morcellos, 12th June, and near Villa Real, 23rd and 24th June.

Rhyacophila relictæ, McLach.—The Corgo at Villa Real, 23rd June, near Ruivães, 29th June, and near Salamonde, 30th June. Formerly only known from the French Pyrenees.

Rhyacophila contracta, McLach.—Near Villa Real, 22nd June, 2 ♂. Formerly only known from the French Pyrenees.

Rhyacophila adjuncta, McLach. (*n. sp.*).—Near Villa Real, 23rd to 25th June, 7 ♂, 1 ♀. A very distinct species, possibly pertaining to the Group of *Rh. vulgaris*.

Rhyacophila lusitanica, McLach. (*n. sp.*).—Near São Romão and Villa Real, 9th and 22nd June, 4 ♂, 1 ♀. A very remarkable species, forming a distinct "Group" that should probably be placed after that of *Rh. munda*.

Rhyacophila tristis, Pict.—Near Cea, 4th and 11th June, near São Romão, 5th June, near Villa Real, 22nd and 24th June, and near Salamonde, 30th June; many examples.

Glossosoma privatum, McLach. (*n. sp.*).—Near Villa Real, 24th and 25th June, 3 ♂. Allied to *G. spoliatum* in wanting the callosity at the base of the anterior-wings in the ♂.

Agapetus incertulus, McLach. (*n. sp.*).—Near Cintra, 31st May, 1 ♂. Allied to *A. fuscipes*, Curt., but apparently quite distinct.

One ♂ and 2 ♀ from near Monchique, 19th and 21st May, are nearer *fuscipes*, but doubtfully identical therewith.

Agapetus laniger, Pict. (= *pactus*, McLach., *olim.*).—Near Ponte de Morcellos, 12th and 14th June, 2 ♂.

Pseudagapetus diversus, McLach. (*n. sp.*).—Near Cea, 4th June, and near Villa Real, 22nd June, 4 examples. Allied to, but apparently quite distinct from, the Pyreneean *Ps. insons*, McLach.

Catagapetus (*n. g.*) *sp. ?*.—One ♀ from the slopes of Foia near Monchique, 21st May. This new genus is based on a species from

Central Italy; it is remarkable for having a closed discoidal cell in the posterior-wings, &c. The Portuguese species is probably distinct, but one should see the ♂.

Ptilocolepus extensus, McLach. (*n. sp.*).—Between São Antonio and Coimbra, 3rd June, near Cea, 11th June, and a doubtful ♀ from near Monchique, 31st May. Very like *Pt. granulatus*, Pict., but distinct in the anal parts of the ♂.

HYDROPTILIDÆ.

* *Allotrichia pallicornis*, Eaton.—Cintra, 1st June, Villa Real, 24th June, 1 ♂, 4 ♀.

* *Hydroptila sparsa*, Dalm.—Cintra, 26th and 27th April. Slightly doubtful.

Stactobia fuscicornis, Schneider.—Between Cea and Sabugueiro, 7th June, between Oporto and Santa Anna, 18th June, near Villa Real, 24th June; not uncommon.

* *Orthotrichia angustella*, McLach.—Near Cintra, 31st May and 1st June, and Ponte de Morcellos, 12th June; many examples.

Oxyetheira unidentata, McLach. (*n. sp.*).—Near Silves, 17th May. Apparently quite distinct from *O. costalis*.

One or two species of *Hydroptilidæ* remain undetermined.

For convenience of reference, the principal localities cited above are here given according to the *provinces* in which they are situated:—

Ancient Kingdom of Algarve:—Foia, Picota, São Marcos da Serra, Silves, Monchique, Alferce.

Alemtejo:—Almodovar.

Estremadura:—Lisbon, Cintra.

Beira:—Cea, Coimbra, Estrella, Sabugueiro, São Romão, Ponte de Morcellos.

Minho:—Oporto.

Traz-os-Montes:—Villa Real, Ruivães.

In order to complete the Linnæan Order *Neuroptera* (and this series of notes), the *Ephemeridæ* and *Perlidæ* still remain to be enumerated. The former will be supplied by Mr. Eaton himself; the few species of the latter by one (or both) of us, so far as they can be determined.

Lewisham, London :
June, 1884.

THE *NITIDULIDÆ* OF GREAT BRITAIN.

BY REV. W. W. FOWLER, M.A., F.L.S.

The position of the *Nitidulidæ* is somewhat difficult to determine; there is no doubt that they have a connection with the *Silphidæ*, both in structure and also through the habitat of many of the members of the family; on the other hand, however, through *Ips* and *Rhizophagus*, they closely approach the *Trogositidæ* (*Nemosoma*, &c.); in fact, Erichson classed the latter with the *Nitidulidæ*, but they are separated off as a distinct family by the different plan of structure of the maxillæ and tarsi. Perhaps, as a whole, the *Nitidulidæ* come in best between the *Histeridæ*, to which in many ways they bear a close relation, and the *Trogositidæ*; and if the aberrant genus *Micropeplus* is to be removed from the *Staphylinidæ*, as seems necessary, to the neighbourhood of the *Nitidulidæ*, it cannot be better placed than immediately after the *Histeridæ*, as a connecting link between *Onthophilus* and the brachypterous genera of the *Nitidulidæ*.

The genus *Byturus* is often placed in the *Nitidulidæ*. It approaches this family, as remarked by Professor Westwood, "in its habit of frequenting flowers, and in the bilobed form of the third and minute size of the fourth joints of the tarsus," but it recedes from it in several important particulars, notably in having the mandibles with several teeth, and in the fact that the tarsi have the second and third joints prolonged beneath into a membranous lobe. Dr. LeConte and Dr. Horn (Classification of the Coleoptera of North America, p. 141) place this genus in the *Dermestidæ*, at the same time noting the above peculiarities, and stating that the position of the genus has been much disputed:—Erichson placing it in the *Melyridæ*, Du Val in the *Telmatoophilidæ*, Redtenbacher and Lacordaire in the *Dermestidæ*, and Kiesenwetter in the *Nitidulidæ*; according to the external skeleton, it might perhaps be placed in the *Mycetophagidæ*. The following are the chief characteristics of the *Nitidulidæ*:—

Head small, sunk into the thorax, which is usually emarginate; forehead sometimes straight, sometimes emarginate, in some cases furnished with strong lobes on each side (*Amphotis*, *Soronia*). Mentum very variable; usually narrow (*Ips*, *Cryptarcha*, *Cercus*); sometimes broad, almost semicircular (*Cychramus*); with anterior angles rounded (*Ips*), or produced into a point (*Nitidula*), often bisinuate in front (*Nitidula*, *Soronia*), or contracted in front and behind, and forming an obtuse angle in the middle of the sides (*Omosita*, *Epuræa*, *Carpophilus*), or rounded in front, and furnished with two sharp strong teeth in the middle of the anterior margin, forming between them a deep emargination (*Meligethes*, *Pria*); the mentum consists of two pieces, the suture of which is more or less plain. Maxillæ

almost always unilobed; occasionally bilobed (*Brachypterus*, *Cercus*); maxillary palpi usually short and thick; sometimes longer and more slender (*Pria*, *Cryptarcha*). Labial palpi short and thick, usually truncate at apex; paraglossæ marked in some species. Mandibles variable: usually bluntly pointed at apex, and toothed immediately behind apex; sometimes quite bifid (*Amphotis*); sometimes simple (*Cychramus*, *Cercus*); occasionally with a large sharp tip (*Cryptarcha*, *Micruria*).

Antennæ inserted under margin of front, 11-jointed, ending in a three-jointed, rarely two-jointed, club. (In *Rhizophagus* the club is two-jointed, and the 11th joint is wholly or partially enclosed within the 10th.) The club is strong, round, and compact (*Nitidula*, *Epuræa*, *Meligethes*), rather loose (*Ips*), or rather elongate and feebly capitate (*Cercus*, *Brachypterus*); the antennæ are received into furrows in the head and thorax, which vary much in width, depth, and direction.

Thorax usually widely margined at sides (*Epuræa*), sometimes very narrowly margined (*Meligethes*), fitting closely to the elytra (*Ips*, *Epuræa*), or overlapping the base of the elytra (*Cychramus*, *Cryptarcha*). Prosternum usually not produced, but occasionally considerably produced (*Pria*, *Thalycra*, *Meligethes*). Anterior coxæ transverse; anterior coxal cavities nearly always closed (open in *Ips*). Mesosternum separating the middle coxæ more or less widely: bifurcate (*Soronia*), or emarginate in a wide curve (*Cryptarcha*), or broadly truncate (*Omosita*), at base; epimera reaching to the coxæ. Metasternum with episterna very narrow; epimera invisible. Elytra entire, covering abdomen (*Meligethes*, *Soronia*, &c.); sometimes truncate, and leaving more or less of the abdomen exposed (*Ips*, *Brachypterus*, *Carpophilus*).

Abdomen with five free ventral segments; males occasionally with a sixth dorsal segment (*Epuræa*, *Brachypterus*, *Carpophilus*). Legs short, usually rather stout, nearly always retractile, in some cases (*Meligethes*, *Omosita*) strongly so; tarsi five-jointed in both sexes, except in one or two foreign families, and in the *Rhizophagina*, in which they are heteromerous in the male; the 4th joint is very small, and the first three are usually broad, and clothed on the under-side with fine silky hairs.

From the above characters it will be seen that the *Nitidulidæ* form rather a heterogeneous family; their clubbed antennæ, however, separate them from a large number of families, and from the other families that also have clubbed antennæ they may be distinguished by the cylindrical anterior coxæ, the free segments of the abdomen, and in most cases by the minute fourth joint of the tarsi.

The following table will be found serviceable for separating the family into tribes; for the greater portion of it, and for other information, I am much indebted to the kindness of Dr. Horn; I have, however, dissected specimens of all the genera, and in some cases of several species in each genus, and representatives of the neighbouring families, and have altered and added to several points in order to suit our fauna; Dr. Horn's system in the main agrees with that of Erichson, except that the latter adds the *Peltides* as a separate group of his *Nitidulariæ*, distinguished by having the first tarsal joint small instead of the fourth, and containing *Nemosoma*, *Temnochila*, *Trogosita*, *Peltis*, and *Thymalus*.

- I. Antennæ 11-jointed, terminated by a 3-jointed club; tarsi isomeric, similar in the two sexes, in the British families pentamerous.
- i. Labrum free, more or less visible.
 - A. Maxillæ with two lobes: antennæ with a feeble elongate club...
BRACHYPTERINA.
 - B. Maxillæ with one lobe; antennæ with a strong, round, compact club.
 - a. Thorax fitting closely to elytra, not covering base of elytra.
 - α. Abdomen with two segments exposed ... CARPOPHILINA.
 - β. Abdomen covered, or only apex of pygidium exposed...
NITIDULINA.
 - b. Thorax covering the base of the elytra CYCHRAMINA.
 - ii. Labrum connate with the front, suture more or less distinct IPINA.
 - II. Antennæ 11-jointed, club 2-jointed, the 11th joint wholly or partially enclosed within the 10th; tarsi dissimilar in the sexes, heteromeric in the males, pentamerous in the females RHIZOPHAGINA.

BRACHYPTERINA.

The members of this tribe may be distinguished by their elongate club, bilobed maxillæ, and very short, feeble, antennal grooves, which are not visible below the eyes; it contains two genera.

1. Claws plainly toothed at base; extra anal segment of male plain..BRACHYPTERUS.
2. Claws not, or hardly, visibly toothed; extra anal segment of male obscure...
CERCUS.

BRACHYPTERUS, *Kugelann.*

1. Elytra one-third longer than thorax.

B. gravidus, Ill.—Easily distinguished from the other species of the genus by its larger size and more convex form, and by having the elytra much shorter in comparison to the thorax: the thorax is bisinuate at base, with the posterior angles almost right angles. Length, $1\frac{1}{2}$ to $1\frac{1}{2}$ lin.

Not uncommon, but local; found on the common toad-flax, *Linaria vulgaris*; Hunstanton, Burwell Fen, Maidstone, Mickleham, Reigate, Folkestone, Shiere, &c.

2. Elytra nearly twice as long as thorax.

B. pubescens, Er.—Lead-black, with whitish pubescence; legs and antennæ pitchy; elytra rather less strongly punctured than is the case with the next species. Length, 1 lin.

Very common on nettles throughout the country.

B. urticae, Kug.—Reddish-brown, shiny; legs and antennæ rufous; pubescence very thin; elytra rather longer in proportion to thorax than in the preceding species, and with rather stronger punctuation. Length, 1 lin.

Very common on nettles throughout the country.

These species are very often mistaken for *Meligethes* by beginners, but, apart from other differences, they may at once be distinguished by their partially uncovered abdomen, simple anterior tibiae, and, especially in the case of the last two species, by their longer and much less retractile legs.

Thomson places *B. gravidus* in a separate genus, retaining Gyllenhal's old name, *Catheretes pulicarius* (Ins. Suec., i, 245).

CERCUS, Latreille.

With regard to the small apical dorsal segment, through the absence of which in both sexes this genus is to a great extent separated from the preceding, there seems to be a difference of opinion; Erichson expressly says that the pygidium is simple in both sexes; Thomson says, "segmento anali maris haud conspicuo;" and Dr. Horn says of the *Brachypterina* generally (including *Cercus*), "the males have a small apical dorsal segment;" as a rule, no such segment is to be seen, but in one of my specimens of *Cercus pedicularius* (♂), there appears to be a very small dorsal segment at the extreme apex, which is only visible under a high power, and when the beetle is held in a certain position.

1. Antennæ long; thorax transverse.

C. pedicularius, Linn.—Very like the next species, but distinguished by its colour—the elytra being reddish-testaceous, with the part round the scutellum and the apex more or less dark—and also by the strongly dilated, triangular, second joint of the antennæ of the male. Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

Common on reeds, &c., in marshy localities. I have beaten it in abundance off *Carex paniculata*, in the Isle of Wight. It also occurs on the meadow sweet (*Spiræa ulmaria*) and other flowers.

C. bipustulatus, Payk.—Elytra black, with two large testaceous spots on disc; colour, however, very variable, sometimes entirely reddish-testaceous; in doubtful cases the species may be distinguished by the simple second joint of the antennæ of the male; single female specimens of the two species are sometimes hard to determine. Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

Common, under the same circumstances as the preceding. I have beaten it from *Carex paniculata* at Nocton, near Lincoln, in some numbers; also found on *Spiræa*, and it has occurred in *Cossus* burrows in Sherwood Forest.

2. Antennæ short; thorax nearly as long as broad, gradually contracted from base.

C. rufilabris, Latr.—Variable in colour; usually blackish, with reddish mouth and legs; sometimes entirely testaceous; always very easily distinguished by the above characters. Length, $\frac{3}{4}$ lin.

Common in marshy localities, on rushes and reeds, and by general sweeping.

CARPOPHILINA.

The genera of this tribe are distinguished from the *Brachypterina* by their compact club, unilobed maxillæ, and very evident grooves for the reception of the antennæ, and by the fact that a larger portion of the abdomen is left uncovered by the elytra. The species of this

tribe are usually considered to be importations, but one or two have occurred under circumstances that give them a better claim to be considered indigenous than many other species already in our lists.

CARPOPHILUS, Leach.

1. Elytra spotted with yellow.

a Thorax narrowed in front and widened behind; elytra scarcely longer than thorax.

C. hemipterus, Linn. (*flexuosus*, Payk.).—Rather stoutly built, short and convex, with thorax much wider at base than at apex; black, more or less pubescent; elytra with a yellow spot at shoulder, and another at apex, sometimes wholly, sometimes partially, covering their apical half. Length, $1\frac{1}{4}$ — $1\frac{1}{2}$ lin.

This cosmopolitan species has often been imported with sugar, dried fruits, grain, and other provisions. Dr. Power, however, tells me that Turner once brought him four specimens alive, which he had taken with *Engis humeralis* in *Cossus* burrows in Dulwich Wood. Dr. Power has himself taken *Silvanus*, *Trogosita*, &c., under bark in the open country, and considers that all of them had probably wandered from some other locality.

b Thorax narrowed in front and behind; elytra twice as long as thorax.

C. sexpustulatus, Fabr.—Long and flat, narrow, somewhat shiny; elytra with parallel sides; thorax almost circular, rather broadly margined at the sides; reddish-brown in colour; elytra with two plain impressions on each, and three spots, one at shoulder, which is often obscure, a plainer one in the middle, and a third at apex, usually obscure, sometimes almost invisible. Length, 1 — $1\frac{1}{4}$ lin.

This is the most doubtful of the three species as British; only a few examples appear to be known, and they are undoubted importations.

2. Elytra without spots.

C. mutillatus, Er. (*hemipterus*, Fabr., nec *hemipterus*, Linn.).—Considerably narrower in proportion than *C. hemipterus*, Linn., but wider than *C. sexpustulatus*; thorax quadrate, hardly broader at base than at apex, sides very slightly rounded; elytra not much longer than thorax; head reddish, thorax and abdomen darker; elytra rufescent, without spots, apical angles and region round scutellum more or less broadly darker. Length, 1 — $1\frac{1}{4}$ lin.

Among some beetles sent me for names by Mr. Beaumont, I found two specimens of this species, which has not hitherto been recorded as British; Mr. Beaumont informed me that they had been given him by Mr. T. R. Hardy, of Manchester, who has himself written to me on the subject; he says that he has considered it to be *C. sexpustulatus*, and that he has taken it very commonly at the bottom of old wheat stacks in his neighbourhood. He has also taken it at Sherwood Forest in *Cossus* burrows, which fact goes a long way towards establishing its claim to be regarded as indigenous. Dr. Power possesses two specimens from Mr. E. A. Fitch, which have evidently been imported with corn; it is very probably in many collections, unknown, or standing under another name.

(To be continued.)

ON THE *COLEOPHORA* OF THE *STATIC LIMONIUM*, HITHERTO
ERRONEOUSLY RECORDED AS *GONIODOMA AUROGUTTELLA*,
F. v. R.

BY H. T. STAINTON, F.R.S.

In the Entomologists' Annual for 1855, p. 46 (2nd Edition, p. 68), I announced the capture in this country of *Goniodoma auroguttella*, on the authority of "a single specimen taken by Mr. S. Stevens in the Isle of Wight, last August, on the banks of the Yar, near Yarmouth, by sweeping the herbage."

I believe the description which I there gave was made from Continental specimens, which we now know to be a totally different species. The same remark no doubt applies to the description given in the Manual, vol. ii, p. 393.

In the Entomologists' Annual for 1874, when summarising the observations on *Tineina*, which had appeared in the previous nineteen volumes, I remarked (p. 32) of this Isle of Wight insect, which, by that time, had been taken also by Mr. Bond and others in considerable numbers:

"This differs rather from Continental specimens, being darker and larger. The Continental insect feeds on seeds of *Atriplex*, using an empty seed as a case. I am assured by Mr. Bond, who has often collected in the Isle of Wight, that where this insect occurs there *Atriplex* is wanting."

It seems strange now that the idea of its being really distinct from the Vienna insect had not dawned on one sooner, as Mr. S. Stevens had very kindly supplied me with living specimens as far back as 1855, which, with others subsequently given me by Mr. Bond, had stood in my collection by the side of a veritable *auroguttella* from Vienna, which I had placed there to illustrate the species when it first occurred with us.

When Zeller wrote his treatise on *Coleophora*, which appeared in 1849, in the 4th volume of the Linnæa Entomologica, the Vienna species had ceased to be found in its original locality, and had not been detected elsewhere. Subsequently, it occurred in Hungary, whence I received specimens from Dr. Staudinger in 1866 and in 1876. In 1877, Herr Mann sent it me from Austria.

I had thus been gradually collecting materials for a more thorough comparison of the insects from Austria and Hungary, with those from the Isle of Wight, insects similar in form and appearance, but of utterly diverse habits, which were still strangely coupled together under the same name.

Last January I received from Mr. W. H. B. Fletcher an intimation that he thought he had found the larva of the Isle of Wight insect, for on the spot where he had formerly taken the imago freely, he had swept early in September a number of larvæ feeding on the flowers of *Statice limonium*, using an empty flower as a case, much in the style of *Gelechia subocellea*, but when full-fed boring into the flower-stem of the food-plant, or into the culm of a grass, leaving the case outside. The case afterwards generally falling off, leaving only the hole, carefully closed with silk, to indicate the presence of the larva within.

In May, Mr. Fletcher, having spent a night at Freshwater, sent me some old stems of the *Statice limonium*, containing larvæ still unchanged, and from these I have, during the past fortnight, bred a nice series of the perfect insect.

That an insect allied to the *Goniodoma auroguttella*, which Fischer von Röslerstamm had so elaborately figured, occurred amongst a *Statice* at Cannes, has already been recorded in the *Annales de la Société Entomologique de France*, 1882, bull. cxlix, by M. E. L. Ragonot, who proposed for it the name of *Goniodoma Millierella*, but this insect from the South of France does not appear to be identical with our Isle of Wight insect.

1° *Millierella* is said to be *smaller* than *auroguttella*; now it is exactly the reverse with our Isle of Wight species.

2° No mention is made under *Millierella* of the much darker ground-colour, which so readily attracts our attention when contemplating the species from the Isle of Wight.

3° The great difference shown between *auroguttella* and the Isle of Wight insect in the colouring of the apical portion of the costal cilia, is not alluded to by Ragonot in the brief notice given of *Millierella*. Hence I am forced to conclude that our British species is not identical with the *Millierella* of Ragonot, and I would propose for it the name of *limoniella*; further, as it would hardly be suitable to place it in the genus *Goniodoma*, its habitation not showing any angles, I would prefer to locate it, for the present at least, in the genus *Coleophora*, of which we now know several species, that bore into stems, such as *C. salicorniæ*, Z. (*binotapennella*, Stn., non. Dup.), and the very handsome South Russian *C. argyrella*, H.-S., hence we cannot look upon that habit as furnishing a sufficient justification for separating individual species from the main genus *Coleophora*.

Therefore, I would call the species *Coleophora limoniella*; it may be distinguished from the Austrian *auroguttella* easily, thus:—Expanse

of the wings, $5\frac{1}{2}$ lines (of *auroguttella*, $4\frac{1}{2}$). Ground-colour of the anterior-wings deep dark yellow, one might compare it to the colour of brass (of *auroguttella*, the ground-colour is pale canary-yellow); the golden markings seem very similar in both species, though in *limoniella*, from the darker ground-colour, they can be far less easily traced.

The most striking character is furnished by the apical portion of the costal cilia: in *limoniella* these incline from brassy dark yellow to dark grey (in *auroguttella* they are pale canary-yellow, hence very strongly contrasted with the apical black streak immediately below them).

Lewisham: July 18th, 1884.

NOTES ON BRITISH TORTRICES.

BY CHAS. G. BARRETT.

(Continued from page 45.)

Pædisca rufimitrana, H.-S.—Larva whitish-green, dorsal region slightly greener, but so transparent that the green contents of the intestinal canal (dorsal vessel) are visible in separate masses; spots large and shining, but of the colour of the body; head yellow-brown or honey-colour, jaws rather darker, dorsal plate greenish, anal plate very pale yellow, legs and under-side of body greenish-white.

On *Abies cephalonica*, spinning together the terminal shoots, hollowing out the young needles, and, afterwards, spinning together the older needles in bunches, and eating some of them through near the base.

Found at Merton by Lord Walsingham, in May, 1882. The larvæ spun up in the gauze covering of their cage, and the moths emerged in the beginning of July.

A most elaborate and exhaustive monograph of this species has been published, at Vienna, by Herr Fritz A. Wachtl, the species being at times very destructive in the forests of Southern Germany. He says that the eggs are laid in groups, and are, at first, of a yellowish-brown and covered with a network of fine lines; the larva dirty greenish-yellow, dorsal and anal plates, and under-side clear yellow, head rust-red. He also describes the position of every dot and bristle on the body, and says that the larva is full grown in the middle of June, and assumes the pupa state in the ground or among *débris*. The pupa rust-red, and tapering towards the head as well as at the hinder end. He also

gives the positions, and remarks on the variable number of the bristles at the anal extremity of the pupa ; and says that the moth emerges in a fortnight.

In the same work is a monograph, if possible still more elaborate, of another fir-destroying species, *Tortrix murinana*, a mottled-brown insect, which being also very abundant and destructive in South Germany (Lower Austria, Moravia and Silesia), may some day be discovered in this country.

The larva is described as rather flattened, thickest in the middle, light bistre-green with dark green dorsal vessel, sides and ventral region yellower, head and dorsal plate shining black with a whitish collar, spots dark and hairs yellowish. When full-fed it leaves the fir tree and assumes the pupa state in or on the ground. This is from the end of May to the end of June, and the moth emerges in a fortnight.

These two species furnish splendid examples of common names, *murinana* being called "White-fir-shoot-Tortrix," and *rufimitrana* "Red-headed-white-fir-shoot-Tortrix."

142, Denmark Hill, S.E.: July 16th, 1884.

DESCRIPTION OF THE LARVA OF *CRAMBUS PRATELLUS*.

BY GEO. T. PORRITT, F.L.S.

Several moths of this species I took here on June 30th last year deposited eggs, and two batches of them I dropped among grass planted in a large flower pot. I do not know when they hatched, and, indeed, have no further notes on them until September 12th, when I found the larvæ were about three-eighths of an inch in length, and were living in silken galleries, spun at the bases of the grass-stems above the ground, and in some cases between grass-stems and the sides of their plant pot. Twelve days later, on the 24th, I examined the pot again, to find the larvæ had grown rapidly, had eaten nearly all the growing grass, and were wandering about the sides of the pot and on the gauze covering. I then described them as follows: length about five-eighths of an inch, of average bulk, and of the usual *Crambus*-shape; head slightly narrower than the second segment, it has the lobes rounded, and is (as is also the frontal plate) highly polished; body cylindrical above, slightly flattened ventrally, of nearly uniform width, tapering only a little towards the anal segment; segmental divisions well defined; the tubercles all polished, large and prominent, the dorsal four oblong-oval in shape, and placed end opposite end, giving the appearance of two transverse ridges on each

segment; the other tubercles of the usual round form. The tubercles give to the skin a rough and uneven appearance, though in reality it is smooth and glossy.

Ground-colour dingy greyish-olive, of lighter or darker shades in different specimens; head a warm brown, marbled with dark sienna-brown, the mandibles also dark sienna-brown; there are no perceptible dorsal, sub-dorsal or spiracular lines; all the tubercles dark smoky-olive. Ventral surface and prolegs uniformly of the ground-colour of the dorsal surface, the anterior-legs polished black.

I supplied them with fresh grass-roots, but they soon commenced hibernation.

On March 16th they were all lively again, and apparently in size, colour and markings just as when described in the autumn. On April 14th, being full grown, I took a number of them out again for further notes. They had not much altered since described on September 24th, many of them did not exceed the length then given (five-eighths of an inch), and none did I see over three-quarters of an inch. They were of the same form, and the most material alteration was in the ground-colour, which had become browner, many, indeed, having quite lost the olive tint; the tubercles had also become browner in accordance with the ground-colour, and in the centre of each was a minute black spot, from which sprang a short hair. The very minute spiracles also black.

They lived in silken tubes spun close to, or on the earth just above, or even among the roots of the grasses, and came out to feed with avidity at night. As they ceased feeding they spun firm silken cocoons among the roots of the grass, or very frequently against the sides of the breeding pot, but just below the surface of the soil. The pupa is about three-eighths of an inch long, and of ordinary shape; it is glossy, fairly plump, and has all the parts clearly defined. Ground-colour bright yellow-brown, the abdominal divisions darker brown, and the eye-cases and anal point nearly black.

I bred a good and beautiful series of imagoes, the first not appearing until June 14th, though I had noticed the species on the wing at large three weeks previously.

Huddersfield : *July 18th, 1884.*

Abundance of caterpillars in Wales.—About a month ago a paragraph appeared in the newspapers to the effect that creatures "like caterpillars" swarmed on some of the mountains in S. Wales to such an extent that they were collected by the people and burnt for fuel in their houses. This was curious enough; and it

passed as one of the periodical exaggerations of local papers. It seems, however, that there has been a more than ordinary "visitation;" we cull the following from a Glamorganshire paper, "The Bridgend Chronicle" of June 27th, as a combination of fact, fiction, ignorance and credulity not to be exceeded even in the records of popular entomology. It will be noticed that there is not an atom of information as to what the insects really are, except the "buzzard-moth," whatever that may be, nor a suggestion of a remedy for the mischief caused by them. We may be allowed to suspect that the insects are the larvæ of *Charaas graminis*, which at times appear in vast numbers, concerning which see Ent. Mo. Mag., vol. xviii, pp. 39, 68, 87, and 111.—Eds.

"*The caterpillar plague on Llangeinor and Cwmpark Mountains.*—A Pontypridd correspondent writes:—The caterpillars on the Ystradfydwg Mountains show no sign of diminution; but, on the contrary, seem to be actively spreading. They are now in vast numbers on the mountain between Ffrwdamos and Gilfachgoch. During the last few days men and boys have brought some of them down to the valley as curiosities. Many public houses contain specimens, and groups of taproom naturalists are frequently to be seen examining them with great interest. Many exaggerated statements are in circulation respecting these insects. In some places it is stated that they have contaminated the water of the reservoir of St. Mary (Ffynon Fair, Fendigaid) on the side of Pen Rhys Mountain. It is from the splendid well of the Blessed St. Mary that this reservoir is supplied with water, and until recent years it was from here the old parishioners obtained water for christening their children. The water being still held in great reverence, the statement that the insect has polluted it has deepened the awe with which some housewives regard what they describe as 'visitation'—indicating to the mind that Satan has something to do with the matter. But there is not a word of truth in the statement that such a contamination has taken place. There is general anxiety to learn the result of Colonel Picton Turbervill's application to have the report of competent naturalists as to the nature of the pest, where it came from, and when it is likely to depart."

"Colonel H. H. Davies, Rompney Castle, writes:—Some days ago, whilst perusing Mr. John Rowland's ('Giraldus') collection of 'Glamorganshire Antiquities,' I found that a similar plague happened in A.D. 1403. All the grass and leaves were eaten up by immense swarms of strange insects. The people limed their walls and grounds for protection, and ever since whitewashing has continued prevalent in Glamorgan, a fact which gave rise to the old saying—'Morganwg a'i muriau gwynion.' In A.D. 1419, there were three days of such intense heat that men and beasts fell down dead, birds died on the wing, and a brake of wood at Margam and some trees and hedges at Nash took fire. The heat also killed the green vermin which devoured the herbage in Glamorgan. Probably the present pests are the same kind as those which troubled our forefathers centuries ago. I shall be glad if any of your readers can inform me if there is any record of their visitations since the above date."

"Mr. Bevan, of Tynewydd Farm, Ogmore Vale, has received from a well-known authority the following description of the insects which are appearing in such extraordinary numbers on the tops of the mountains in that vicinity:—'The insect is known as *Nocturas meph*, a species of caterpillar septinoreare. In the year 1858 it appeared in Kent and destroyed all the hops. It takes three weeks from its

import to form a chrysalis; afterwards, in three months, a caterpillar.' The first extraordinary visitation has been followed by another annual one in the locality. Thousands of rooks pay a daily visit early in the morning, and are devouring our first visitors."

"Mr. Thomas James, Aberkenfig, writes:—Having last week read the letter on the pests of the mountains, and heard so many different accounts and opinions of people on the same, I went to see for myself. Having found them, I bottled a few dozens as specimens, and I beg to offer an opinion and an experience of my own. First. What they are and how can we account for such numbers? They are no more nor less than very common caterpillars which we see every year, and every child in the country is very well acquainted with the little monster when in full development. They have fourteen feet, and I should say a fine set of teeth, for they devour their allowance with voracious rapidity. But it is for a very short time; their time of fasting is drawing nigh.

"Second. What will they be? From the egg came forth the cater as slender as silk thread. In nine days or a fortnight it attains its present size; and, as I stood gazing at them, many burrowed into the ground, but the majority went into the tufts of rushes and dead grass, there to remain fasting four, five, six, or seven months, according to season. In that stage and state we will treat of them next. 1st. Their bodies contain gluish substance, and, as by perspiration, it flows out all over the body, and thickens until a cloak is formed that will bear almost every hardship. 2nd. The form turns into a very ugly but harmless grub. In a few months it resembles in shape the weaver's shuttle, the swordfish, and the rhinoceros. The middle portion becomes large and lumpy, with a spear one-eighth of an inch projecting forward from between the shoulders. The hind-part tapers as the shuttle; the head, also sloping, resembles that of the rhinoceros. In this position, without food or water, and to all appearances dead and motionless, it awaits the next transformation, which takes place according to the season in April, May, June, July, August, and September. Now, in either or in all these months, we can expect to see the buzzard-moth, which is the full development of this mysterious cater which is causing so much anxiety. This moth, maturing last May, commenced forthwith to propagate its offsprings by laying the eggs, and here is the caterpillar. Now, the natural and native place of this species of moth is marshy ground where rushes and flags of all kinds grow, such as are in abundance on flats on mountain-tops and between them also.

"The buzzard-moth is a thick-bodied animal, small wings in comparison to its body, of light greyish ground-colour, spotted all over with a dark grey, and expires of old age and weariness in a few weeks after depositing the eggs, if he is left to live so long, for the poor harmless thing has many enemies. Birds of all kinds feast on its fat body, and are, therefore, always chasing it. 3rd. How are we to account for the countless numbers of this year? We will return to the summer of 1882, and take the ordinary number of moths left from the previous winter. They deposited their eggs that summer, transformed into caterpillars, and, therefore, into grubs, and made their way to their proper refuges. When the grub fixes in a crevice, and that fills with rain-water so as to cover it, death is certain. If frost of long duration sets in it is destructive to the grubs which are only a few inches from the surface. The large majority in rushes, old grass, and flags, are the safest by far. But when

neither frost nor water can kill, the curlew and plover, which are so fond of mountains in hard winters, can. These plovers inhabit the sea-marshes, but when frost locks their food there their instinct teaches them to look for it in a similar place, which they find on mountains; and there, when frost and water miss the moth-grub, they will work their beaks into the rushes and grassy tufts, and devour myriads of them in a few weeks. Now, the winter of 1882 was mild, with the exception of two or three days' frost, and left the grubs all alive and kept the birds in their marshes as well. The summer of 1883 produced them all alive. They again fostered in their usual way, and were very numerous. Last winter was mild, and this good summer produces the myriads of caterpillars as a result of two mild winters."

Action of Cyanide of Potassium on colour.—The recent notice in the Magazine of the action of cyanide of potassium on a butterfly reminds me that I have noticed the directly opposite effect. In June, 1880, I was at Zermatt, and filled all my boxes the day but one before leaving, but, having a tin-killing box with a perforated division in it (I always use saturated solution of cyanide) I put my next day's captures between papers in the top part, but, unfortunately, did not remove the cotton-wool from beneath, which was soaked in the cyanide. I was unable to set these for four or five months, and when I took them in hand found that they were all bleached. *Lycæna Hylas* and *Damon* were changed into the palest brown or buff, *Satyrus Alcyon* and *Actæa v. cordula*, ♂, had all the colour taken out of them, as well as *hyperanthus* and several others, so much so, that if I had not known what insects were in the box they would have been totally unrecognisable, as they were all thoroughly bleached and rendered more or less transparent.—GEORGE T. BAKER, 9, Augustus Road, Birmingham: July, 1884.

Note respecting Argynnis Jainadeva and A. Adippe.—In a small series of butterflies from the N. W. Himalayas recently presented to the Museum, I found a male example of *Argynnis Jainadeva* so closely resembling *A. Adippe*, ♂, both in its ground-colour and in the size and arrangement of its markings, that I was at first convinced that Mr. Moore must, as some Lepidopterists assert, have erred in separating it from the European species: upon placing it with our series of *A. Adippe* I was, to my surprise, immediately convinced of its total distinctness.

Mr. Elwes has frequently urged upon me the importance, in his opinion, of the expanded fusiform patches upon the median branches in the males of many species of *Argynnis*, as probably constant and therefore valuable characters for the determination of otherwise nearly allied forms; in this opinion I have no doubt he is right, and therefore I do not hesitate to regard *Argynnis Adippe* (the male of which has two such patches upon the primaries) as perfectly distinct from *A. Jainadeva*, in which these patches have not been developed.—A. G. BUTLER, British Museum: July, 1884.

Note on Vanessa cardui.—With regard to the note in last month's Ent. Mo. Mag. (p. 34), I may say that this species appears to be most unusually abundant on the Continent this year. I recently made a short excursion, chiefly in Savoy. Butterflies did not appear to be so common as they usually are in alpine districts. But *V. cardui* was everywhere, from 5500 ft. downwards, and, in individuals, pro-

bably represented about one-fourth of all the Butterflies observed. Most of the specimens bore evidence of hibernation and travel, but occasionally an example was seen in so fresh a condition as to induce me to believe it must have recently emerged from the pupa state. I observed no tendency to form "columns," nor of any particular direction in flight; they were simply dashing about in the usual wild manner.—R. McLACHLAN, Lewisham, London: July 17th, 1884.

Cochlophora (?) *valvata*, Gerst. (cf. ante p. 27).—It can hardly be expected that I should be able to explain how an error originated in one of the "Zoological Records" of ten years ago; but I wish to point out that although Gerstäcker found no remains of larva or pupa in cases, he, nevertheless, found traces of a cocoon or web still adhering to the opening. The first account of *Cochlophora* (?) *valvata* occurs in Arch. f. Nat. xxxvii, p. 361 (cf. Zool. Rec. viii [1871] p. 370; and x [1873] pp. 374 and 392.—W. F. KIRBY, British Museum: July 10th, 1884.

[I had not asked Mr. Kirby how his error originated: its existence was pointed out as a warning to his readers. If he had read my paper in connection with Gerstäcker's account, he would have seen that the "traces of a cocoon or web still adhering to the opening" are duly noted by me.—R. McL.]

Habits of Grapholitha olivaceana.—I have just learned from Washington that the Tortricid larva inhabiting the curled tips of *Solidago* in the United States, and which I inferred, from the close resemblance of the young larvæ, might prove to be *Padisca Scudderiana*, has given forth the *Grapholitha olivaceana*, Riley, the life-habits of which were hitherto unknown. This fact will be of interest to those American Lepidopterists who have followed the discussion of the subject at the meeting of the Entomological Club of the A. A. A. S. last autumn.—C. V. RILEY, Montpellier: June 24th, 1884.

On a singular habit of Osmia bicolor, Sch.—Since writing my note on *Osmia bicolor* (p. 38 ante) I have had two more opportunities of watching this bee. The first was on the 12th of June, when I went to the same spot from which I made my previous observations; I had not been standing there long when I again had the satisfaction of seeing this bee engaged on the singular business of gathering dry bents of grass, and carrying them off in her jaws; having, this morning, time at my disposal, I waited about this place for upwards of two hours, and endeavoured several times to mark-down the bees, in order to try and find out what they did with their burden, but in every instance I was disappointed, for they all went to the wood below and were there lost to sight. Following them into the wood I found quite useless, as I could not make out their whereabouts, though I strolled about where I thought there was a likelihood of seeing them; so beat back to my old quarters. There was only one bee that went up the hill, and this I followed; she was more heavily or rather more cumbrously laden than any of the others, for she carried a long blade of bent much longer than any I had previously seen; I marked her down and got close up to where she alighted, and thought now I should see what she was doing, and be able to solve the mystery, but she was only resting, for, on my approach, she started up, and with the long bent hanging from her jaws, was making for the same direction

that the others had taken, when I stopped her from going any further, and secured her and her burden. Now, here comes a question, why did this *one* bee go up the hill side, when all the others had taken a contrary direction? Can it be put down to instinct? Did she know the burden she was carrying would weigh her down, and that, consequently, she must start from a higher elevation in order to clear the tops of the trees below? It looks uncommonly like it, and we know that the intelligence of this genus ranks very high. The next time I went was to all appearance an equally favourable day, but although I waited a considerable time I only saw one bee with a straw, and this was a very worn and faded insect. Since then I have not seen any specimens of this bee, and conclude that they have entirely disappeared for the season, and, therefore, I shall not be able to prosecute my enquiries further in this direction. I notice that Shuckard, in his "British Bees," in speaking of *O. bicolor* and *O. aurulenta*, says that when they nidificate in snail-shells, after the cells are deposited, "they close up the aperture with earth and pebbles, or sticks agglutinated together;" the one I found is covered-in with plain earth, and nothing else. *Osmia aurulenta* also occurs in this neighbourhood, but I have found this to be a burrowing bee, and I have never observed it carrying bents.—V. R. PERKINS, Wotton-under-Edge: *July 1st, 1884.*

Colioxys elongata pupating on a thistle.—It may be interesting to note a very curious departure from the supposed ordinary course of this species, which I bred on the 7th July from a cocoon found on a thistle on the 26th June.

My young friend, who has been doing a little to Entomology for the past seven years, took unto himself a wife, and during his wedding trip saw a *Vanessa cardui* larva on a thistle. It struck him that he might as well collect a few larvæ of *cardui*, and in searching the thistles, he found the cocoon in question, and at once came to the conclusion that it was an ichneumon cocoon. Knowing my weakness for the *Ichneumonidæ*, he boxed it, brought it home, and gave it to me, with another supposed to be ichneumon, but which is without doubt that of a species of *Syrphidæ*.

The cocoon is very compact and hard, and it has resisted my efforts to soften a portion of it in spirits of wine, and afterwards in boiling water. I was desirous of doing this to ascertain, if possible, of what the outside covering consists. I very strongly suspect it consists of portions of the florets of a thistle, as it has every appearance of it, and in examining it with a strong lens, I can see the silken cords or web which formed the foundation of the cocoon. My young friend thinks the web was made by the larvæ of *cardui*, the web being the cause of attracting his attention to the thistle, thinking it contained a *cardui* larva.—G. C. BIGNELL, 7, Clarence Place, Stonehouse, Plymouth: *July 14th, 1884.*

Odynerus reniformis, Gmel., at Chertsey.—While rambling along the railway bank at Chertsey in search of *Hymenoptera*, at the latter end of May, my attention was attracted to what appeared to me at first sight to be a species of *Ichneumonidæ*, but as its flight backwards and forwards was very rapid, it was some time before I succeeded in capturing a specimen; at last I managed to get one in the net, and was delighted to find it was a species of *Odynerus* which I had not before met with. This led me to look carefully for its habitat, which I imagined must be somewhere in the bank close by. Some few yards from where I made my first capture, I came

upon a small bare spot of ground, certainly not more than two feet square, and here I found a cluster of beautifully granulated curved tubular entrances, eleven in all, closely resembling the entrance tubes made by *O. spinipes* to its nest, the tubes rising from the surface of the ground about one inch and a half, and, while examining these curious structures, I managed to take two more specimens on their return to their storehouses, each having a larva of some species of *Lepidoptera* in its mouth. A heavy shower of rain prevented me from continuing my observations, and from capturing more on this occasion. On taking the three specimens to my friend, Mr. Edward Saunders, for his kind identification, he at once pronounces them to be *Odynerus reniformis*, Gmelin, and informed me that, with one exception, this species had never before been met with in England, he having taken a ♂ at Chobham in June, 1876. Acting upon his advice, I again visited the same spot a few days after, the result being the capture of nine ♀ and two ♂. On opening one of the cells I found it stored with no less than 33 small larvæ of a species of *Noctua*, and 4 sawfly larvæ, all alive, but apparently paralyzed by the sting of the wasp. Upon visiting the same place again at the end of June, I found that the railway company's servants had mown and burnt the herbage along the banks, leaving not a vestige of vegetation, nor of this rare wasp.—T. R. BILLUPS, 20, Swiss Villas, Coplestone Road, Peckham : July, 1884.

Deliphrium tectum, Pk., &c., in Warwickshire.—Early in May last, I captured three specimens of *Deliphrium tectum*, under bones placed in a shrubbery at Knowle as a trap for *Homalota*. At the same time and place, and under similar conditions, I took *Ilyobates nigricollis*, Pk., and *Callicerus obscurus*, Gr., and *C. rigidicornis*, Er.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham : July 16th, 1884.

Ancyrophorus homalinus, Er., at Bewdley.—Whilst digging into the banks of the Severn at Bewdley a few days since, in search of *Homalota insecta*, I turned out two examples of *Ancyrophorus homalinus*, a beetle new to this district.—Id.

ENTOMOLOGICAL SOCIETY OF LONDON : 2nd July, 1884.—J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

Dr. Fritz Müller and Dr. Packard were elected honorary members, and C. G. Barrett, Esq., of Pembroke, an ordinary member.

Mr. C. O. Waterhouse exhibited various species of Phytophagous beetles, to shew the extraordinary effect that exposure to light had produced on their colours. Fiery red had turned to bright green, pale yellow to brown, blue to black, and green to purple. The specimens exhibited had been in the public galleries of the British Museum for twenty-five years.

Dr. Sharp shewed curious cases from house-thatch, containing a species of *Lucanida* (*Odontolabis carinatus*), sent from the hills in E. Hindostan, by Mr. Inglis. The cases were about a quarter of an inch thick and smooth inside, they were thought by their finder to be hibernating cases, but Dr. Sharp thought they might possibly prove to be cocoons. He also shewed the larva of a small *Cassida* (*Porphyraspis tristis*; Dej.) from Bahia, which gathers fibres, and makes a nest like an inverted bird's nest, under which it lives.

Mr. E. P. Collett shewed a specimen of *Calosoma sycophanta* taken at Margate, and a series of the ♀ of *Athous difformis* taken at Guestling, by Rev. E. N. Bloomfield, this being the rare sex of this beetle.

Mr. Kirby exhibited drawings from Mr. Gooch of a species of *Mymaridæ*, reared from Coccus off St. Michael's oranges, and a series of drawings of saws of *Tenthredinidæ*.

Mr. Billups shewed the new British species of *Trichopteryx*, described in the last number of this Magazine (*ante* p. 35), and also a nest of a species of *Pelopæus*, taken from a hogshead of tobacco. Mr. Kirby observed that the British Museum had a similar nest attached to a head of maize.

Mr. Olliff exhibited the larva of a Coleopterous insect, mentioned by Mr. Darwin, in "Nature," as having been found in an encounter with an earthworm. Mr. Billups and Mr. Distant thought such encounters were far from rare, and Dr. Sharp said he had kept *Cybister* larvæ alive for some time on chopped earthworms, and Mr. Billups had done the same with *Carabus auratus*. Mr. Cole thought this might throw some light on the later stages of some of the parasites which existed in the earthworm in their earlier life, and which had, hitherto, been looked for in birds.

Mr. H. T. Stainton sent a note pointing out that the gooseberry caterpillar had been reported in one of the Scotch newspapers as feeding on black currant in Perthshire,

Paper read—Further additions to Mr. Marshall's Catalogue of *Ichneumonidæ*, by J. B. Bridgman. Mr. Fitch exhibited specimens of some of the species described therein, and pointed out the great dissimilarity between *Cryptus pygoleucus*, Gr., and *Agrothereutes Hopei*, which are united by Mr. Bridgman as ♂ and ♀ of the same species.

The President enquired if any of the members had been present at the meeting lately held on trinomial nomenclature. Dr. Sharp replied that he had been there, a discussion then ensued on the subject, in which the general feeling of the Society appeared to be adverse to giving a distinctive name to every variety.

ON THE VERY INTERESTING, BUT LONG OVERLOOKED, *DACTYLOTA KINKERELLA*.

BY H. T. STAINTON, F.R.S.

First captured in Holland in 1865, it was not described till 1876, but since then it has achieved considerable notoriety; and probably most European collections of *Micro-Lepidoptera* now possess the insect.

It most likely occurs on all the coast sand-hills of Northern Europe. The perfect insect is so like *Elachista rufocinerea* that it would scarcely be possible to distinguish it, either when at rest, or when running about in the net; but the inner margin of the anterior-wings is more uniformly sprinkled with dark scales than in *E. rufocinerea* (which generally has the inner margin pale), and the base of the costa of these wings is more rounded (more high-shouldered one might say).

The essential character, however, lies in the posterior-wings, which are not only Gelechiform, but have that form exaggerated by the indented angle being prolonged so as to form a slight incision in the wing.

German Entomologists have made pilgrimages to the sandy shores at the mouth of the Oder, and have collected the larvæ in considerable numbers; but in Holland, the specimen taken in 1865 was still unique, when Heer P. C. T. Snellen wrote the concluding portion of his great work on the "Vlinders van Nederland" in 1882. I believe, however, that last autumn some of the Dutch Entomologists have succeeded in finding the larvæ of *Dactylota Kinkerella* in considerable numbers; hence, it becomes of increasing interest to the Entomologists of this country.

I append to this notice extracts from the letters I have received from time to time from Professor Zeller, showing that September is the month for collecting the larva, which unfortunately does not pupate till the following spring. To these extracts I have added the original notice of the insect by P. C. T. Snellen, which appeared in 1876 in the 19th volume of the "Tijdschrift voor Entomologie."

Professor Zeller, writing to me on the 8th September, 1878, said:

"Dr. Wocke came to Stettin on the 30th August on his way to the watering-place Misdroy. His main object was, probably, the larva of *Kinkerella*. He had promised to write to me but did not do so till the day before yesterday; his very first day he collected 20 of these larvæ, the following days he did not find so many, but altogether he got about 50, so that he hopes to breed the perfect insects. The larvæ are much attacked by parasites. Yesterday I called on Professor Hering with this letter, hoping that he might thereby be tempted to make an excursion to Misdroy, in which case I would have gone thither with him for a few days; but I found that the worthy Professor was expecting two visitors, so that he cannot leave home before the end of the month, which would no doubt be too late. However, Herr Büttner is off to Misdroy to-day, and will collect all the larvæ of *Kinkerella* which Wocke has left, so that were I to go on Tuesday, which is the earliest day I could get away, I should probably find there were none left for me. I wrote, therefore, yesterday to Wocke and begged that he would send a few larvæ to Schulz for figuring, and that he would himself write out an accurate description of the larva and its mode of life."

Three weeks later, on the 29th September, 1878, Professor Zeller wrote to me again:

"I have not been to Misdroy, the weather has been too unpropitious. This is also probably the reason why Dr. Wocke, who had intended to stay there till the end of the month, came back on the 23rd. He has, in accordance with my request, forwarded some *Kinkerella* larvæ to Schulz, and the latter has figured them.

"Büttner has found the larvæ not only at Misdroy, but also at Swinemünde, and at the latter place in such plenty, that he has given some to Professor Hering and to me. I would venture to bet that this species will also be found in England. It certainly occurs on all the sandy coasts of the Baltic and North Sea, where its food-plant *Ammophila arenaria* (*Arundo arenaria*, L.) grows. Since the larva hibernates in a slight cocoon on the stems and leaves, it would be possible to find it in England even before the end of the present year. Expecting, as I do, to breed the insect, or if unsuccessful in doing so, that I shall yet receive it from others, I am forwarding to you next week my solitary specimen."

Professor Zeller, writing on the 10th September, 1882, said:

"A week ago Dr. Wocke passed through Stettin on his way to Misdroy, where he hopes to cure his asthma. He will principally collect larvæ of *Eupithecia* and larvæ of *Kinkerella*. He has not yet been favoured with much good weather."

His next letter, on the 4th October, 1882, reports:

"Dr. Wocke, on account of his asthma, remained a month at Misdroy, where he had not only the pleasure of being well bitten by the numerous gnats and sand-flies, but he also collected a considerable number of larvæ and pupæ. Of his larvæ the most important in my eyes are those of *Kinkerella*, of which he has collected about 180, and he hopes to bring them safely through the winter by sprinkling them from time to time with salt-water."

The notice of *Dactylota Kinkerella* given by P. C. T. Snellen in the 19th volume (1876) of the "Tijdschrift voor Entomologie" may be translated thus:

"Some years ago Heer J. Kinker of Amsterdam, a zealous and careful Entomologist, submitted to me, to Heer de Graaf and others, a curious little moth taken near Noordwijk, which, from the greyish-white anterior-wings finely sprinkled with darker scales, would seem, at first sight, related to *Elachista rufocinerea*, till a closer examination showed that from the form of the posterior-wings it belonged to the *Gelechiidæ*. Heer de Graaf at once suggested that a new genus should be formed

CHANGE OF ADDRESS.
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for its reception, and Professor Zeller, to whom the specimen had been submitted, concurred in this view, but it seemed desirable, before doing so, that other specimens of the same species should be obtained.

Unfortunately, no second specimen has been found, and the first capture still remains unique, but as in von Heinemann's "Schmetterlinge Deutschlands und der Schweiz" there is nothing agreeing with Heer Kinker's insect, I have thought it desirable, before describing the insect in the second part of my "Vlinders van Nederland," on which I am at present engaged, to give the new genus a more extended publication by means of the "Tijdschrift voor Entomologie."

As above mentioned, the peculiar form of the posterior-wings (resembling the prow* of a ship) shows that its nearest relations are with *Gelechia*, Zeller, and the allied genera. Then the labial palpi are short, but distinctly falciform, with the terminal joint pointed, and with a little tuft of 10—12 diverging hairs at the base; the maxillary palpi are wanting, the head is smooth.

Amongst the *Gelechidae* which possess these characters the genera *Psoricoptera*, *Chelaria*, *Cleodora*, *Xpsolophus*, *Nothris*, *Holcophora*, *Sophronia* and *Megacraspedus*, are excluded from our comparison by the labial palpi having a long tuft to the middle joint, or the terminal joint with its under-side roughly scaled. It is thus only with the old genus *Gelechia* that our new species can be compared. This extensive genus von Heinemann has split up into several smaller genera, of which, however, the characters do not appear to me to be laid down with sufficient precision. It would have been better to have laid more stress on the neurulation of the wings and the form of the palpi as foundations for his genera—thus, as regards the neurulation, the position of veins 3—5 of the posterior-wings, and of 6—8 of the anterior-wings deserves our attentive consideration.

Turning to our new species we find that vein 2 of the posterior-wings arises at two-thirds, and vein 3 at four-fifths of the inner margin of the middle cell, and that in the anterior-wings only veins 7 and 8, which have a common stalk, terminate in the costa. In these characters it resembles only von Heinemann's genera *Pæcilia*, *Ergatis*, *Argyritis*, *Monochroa*, *Lamprotes* and *Doryphora*, but from all these it may be distinguished by the extremely short, though pointed, terminal joint of the palpi, which is scarcely a third of the length of the middle joint, and further by the form of the posterior-wings of which the hind margin shows under the point in cell *b* an incision, as though the wing would be split as in the *Pterophori*.

* This comparison is now rather obsolete, as the prow of a ship is no longer formed as it used to be. —H. T. S.

The characters of the new genus may thus be determined as follows :

Anterior-wings lanceolate, posterior-wings oblong-quadrangular with pointed projecting tip, the cilia very long. Antennæ little more than two-thirds the length of the anterior-wings, filiform, the basal joint oblong, little broader than the shaft, with some diverging hairs at the base. Maxillary palpi and tongue wanting. Labial palpi falciform, with pointed terminal joint, the middle joint flat, as long as the head, beneath thin, above half as broad as the eyes, the terminal joint one-third the length of the second joint, of uniform breadth at the base, the tip pointed, both joints are rather rough in front, but smooth-scaled behind.

Head rounded, rather flat, clothed with long closely-appressed scales, the face oblong, broader than the eyes. Eyes moderate, ocelli very distinct. Thorax twice as broad as the head, flatly arched, smooth-scaled. Abdomen a third shorter than the posterior-wings, thin, with a short anal tuft (♂). Legs formed and spurred as usual, of moderate length.

Anterior-wings with 12 veins, the middle cell narrow, pointed, without distinct hind margin, veins 2 and 3 remote from each at two-thirds of the inner margin of the cell, 4, 5, 6, diverging from one point from the apex near the stalk of 7 and 8 which run to the costa, 9, 10, and 11 apart from each other, 12 short; no supplementary cell.

Posterior-wings with perceptible, though short, inner margin, a rounded anal angle, and at vein 4 the rounded curved hind margin, in which below the long projecting point is an incision. Cilia one-fourth longer than the breadth of the wings.

The posterior-wings have the inner-marginal veins very indistinct; vein 2 arises at two-thirds, 3 at four-fifths of the inner margin, 4 and 5 from one point from the inner-marginal angle, the transverse vein tending backwards but soon ceasing, and the middle cell open, 6 wanting,* 7 is the continuation of the anterior margin of the middle cell, and runs very near the costa, ending in the apex of the wing, 8 is very short.

The costa and inner margin of the anterior-wings are parallel, and tolerably straight, the cilia at the apex rounded. The ground-colour of the palpi, antennæ, head, thorax, and anterior-wings is a greyish chalky-white, the latter sprinkled more and more with dark grey scales towards the hind margin and apex, and even on the cilia; these form no definite markings with the exception of a faint intersecting line in the middle of the rather yellowish cilia.

Posterior-wings light grey, with yellowish cilia. Abdomen also light grey, with greyish-white, short anal tuft.

The under-side is greyish-white, paler towards the apex of the wing, with some indications of the intersecting line in the cilia from the apex of the wing.

The middle cell of the anterior-wings occupies about a third of the breadth of the wings, and reaches to three-fourths of their length; that of the posterior-wings is above half the breadth of the wings, and two-thirds of their length.

The specimen, a male, was taken by Heer Kinker, June 5th, 1865, at Noordwijk, probably on the edge of the dunes.

* The posterior-wings have a fold at this place on both sides, so that it is impossible to see whether vein 6 is really present, or whence it arises.

Possibly this species is not the only representative of the genus, and perhaps amongst the species placed by von Heinemann in his genus *Doryphora* are some that might be located along with *Kinkerella*."

Mountsfield, Lewisham, S.E. :

May 15th, 1884.

Occurrence of the larvæ of Dactylota Kinkerella in Holland.—Since writing the above, I have heard from my friend Heer P. C. T. Snellen, that the indications I had sent him last autumn had enabled the Dutch Entomologists to find the larvæ of *D. Kinkerella*, "in the leaves of *Pisum* on the dunes; they were very plentiful in Zealand, though much scarcer near the Hague, but dreadfully infected with various *Ichneumonidæ*. Moreover, as the larvæ pass the winter unchanged, many die from "too much moisture, or from being too dry," so that the prospect of rearing the perfect insects was not too bright when my friend wrote to me.—H. T. STANTON: July 12th, 1884.

LIFE HISTORY OF *AGLOSSA CUPREALIS*.

FROM NOTES BY THE LATE W. BUCKLER, EDITED BY REV. J. HELLINS, M.A.

This is one of the species, the larvæ of which my late friend, Mr. Buckler, had in hand at the time of his death, and the following account of it is compiled from the very full and precise notes left by him, with some little additions which were necessary to complete the life history.

The eggs were obtained by Mr. W. H. B. Fletcher, who has also very kindly given his assistance in working out some points in the economy of the larva.

The eggs were laid by a captured moth during the last week of July, 1882, being deposited, for the most part singly, on the sides of a chip box; on August 7th they changed colour, and on the 14th the dark heads of the larvæ were visible through the shell; most of the larvæ hatched on the 15th, several more on the 17th, and one or two again on the 20th and 21st.

The larvæ on hatching immediately hid themselves under a little loose bit of the chip box, as if instinctively seeking their natural habitat, which is among and under rubbish accumulated on the barn floor: they were at once placed on a little of such rubbish, made up (as described in the history of *A. pinguinalis*, Ent. Mo. Mag, vol. xx, p. 193) of husks of wheat and oats, bits of straw and dried grass, and various dried stems and seeds—and on this they were reared. Mr. Fletcher considers that very probably they would prefer the wheat-

straw, and husks, and would not by choice eat *Cladium* thatch; one larva sent when nearly full-grown to Dr. Chapman made itself happy on a diet of bread; it seems too that it is needful the food should not be too dry; anything like mildew caused by damp would be injurious, but unless there is a certain amount of moisture in the food, such as would generally exist in shady corners of stables and barns, the larvæ seem to be starved, and certainly decrease in size; and though they will bear starving to some extent, yet if the drought be continued, they die. From the first they spin the rubbish together, making tubes much in the same way as *pinguinalis*, and often making use of a straw, bean-husk, or folded leaf of *Cladium mariscus*, as a private retreat; they seem, when supplied with plenty of materials, to make the sides of their galleries of some considerable thickness, and sometimes two or three larvæ were found inhabiting the same gallery, which, however, in such a case would be noticeably longer than one occupied by a single tenant.

The young larvæ fed away at once, and their growth could be noticed after a few days; in less than three weeks they were 4 mm. in length, and in four weeks more 7 mm.; when disturbed they were very active, jumping backwards, hiding again as soon as possible, and showing great aversion to the light, and this, indeed, is the habit all through with the larva; the number of moults was not observed, but one took place at about the age of two months, when the length was still about 7 mm.; and in another month, November 17th, they had not grown much, but a fortnight later again the largest was 9 mm., and this still was the length of one examined after hibernation on March 4th, 1883; on March 26th one was turned out, which measured 13 mm., but by May 1st most of them had not yet attained that length; by the 21st the largest was 19 mm., while some were only 10 mm. long; on July 17th the largest had become 21 mm., others remaining still very small; and the last examination made by Mr. Buckler, September 18th, found them in the same condition: meanwhile, Mr. Fletcher had noticed that from the first some of the larvæ, which he was rearing, were bent on outstripping the rest, though they were all kept together, and received precisely the same treatment; and during the summer of 1883 he bred two moths, and probably would have bred more, had he not killed several of his largest larvæ by keeping their food too dry through the winter, when he supposed they were hibernating; but by far the largest number of his larvæ lived over 1883, and hibernated a second time, as was the case with all those in Mr. Buckler's care; these last came into my possession, and on

March 17th, 1884, I measured one fully 26 mm. long when extended in walking, and about 22 mm. when at rest, and this I think would be the full-grown length : on 13th June I found I had three or four cocoons formed, and on the same day received four other cocoons from Mr. Fletcher, two containing pupæ, and two larvæ yet unchanged ; Mr. Fletcher bred the rest of his moths in June and July, mine all emerged between July 12th and August 3rd, and on July 26th Mr. Fletcher sent me eggs from a captured moth.

The lifetime, therefore, of an individual of this species may be either one or two years in duration, out of which period its egg-stage occupies three weeks or less, its pupa stage about a month, and the intervening ten or twenty-two months are spent as a larva.

The egg is of a good size in proportion to the parent moth, and is of broad-oval outline, and plump, being about $\frac{1}{4}$ mm. in long diameter, by $\frac{1}{8}$ mm. in the shorter, and $\frac{1}{8}$ mm. in thickness, and seems to be deposited generally on its side ; the shell is thin, dull, and covered all over with large shallow irregularly pentagonal reticulation ; at first the colour is much the tint of new chip, but in about ten days this becomes a very pale warm drab, and in another week the head of the larva shows as a brown spot on one side of the egg.

The newly-hatched larva is $2\frac{1}{2}$ mm. in length, is just the colour of new chip, head light brown, the neckplate very much paler brown with a margin of pale skin between it and the head ; the skin opaque, but allowing the internal vessel to be seen faintly, and at the twelfth segment more plainly ; in ten days this internal vessel has become dark, and shows plainly through the pale skin : in another ten days, when the larva is 4 mm. long, the body is wholly of an olive brown colour, the segmental folds showing somewhat paler ; three weeks later, the larva, with an average length of 6 mm., is slender, the head light brown, rather shining ; the skin transparent, but showing its whitish-grey tint at the segmental folds, and also along the sides when one looks down on it from above ; but the internal organs are so dark, of a slaty-drab tint, and show through so plainly, that the general aspect is very dingy, the glossy plate on the second segment is black behind, and paler in front, the eleventh segment shows paler than the rest, and in some examples the thirteenth also ; the anal plate is pale almost whity-brown, the usual dots are very minute but show dusky on the pale skin. In another fortnight the internal parts appear quite blackish, with paler intervals on the hinder segments, which show the greyish-white of the skin, the head brown, the plates as before, the belly and all the legs colourless ; at this date, during a

moult, the blackish colouring is lost from the interior, so that only the head retains its colour, and the neck plate and two or three following segments become greyish: the general appearance now remains much the same for some time, till the length of 9 mm. has been attained, the skin being so clear that the pulsating dorsal vessel can be seen between it and the dark internal organs.

During hibernation the length remains the same, but the body becomes somewhat stouter; at the beginning of March, the head is reddish-brown, the body dark slaty-grey brown with blackish dorsal line, but the back of the eleventh and thirteenth segments, the front margin of the second, and all the legs, are greyish-white; the skin is still so clear that the tracheal threads can be seen through it. From this time, as the larva increases in size, it seems to become darker in tint, and the skin becomes less transparent, and is in itself of a dirty whitish tint, and the dusky dots become less distinguishable; when the length is about 12 mm., the general colour is brownish-black or black, the head darker than before but retaining its reddish-brown tinge, the middle part of the upper lip paler reddish-brown, the jaws black; the anal flap pale-brownish and semi-transparent, as are all the legs, and the papillæ. At this stage, however, it seems the colour may vary according to the state of the food, or the proximity of a moult; it was noticed that a larva, which was looking pale greyish-drab, and was therefore considered a variety, on having its food damped turned black in twenty-four hours; and a figure was taken of a larva, more than 16 mm. long, preparing for a moult, drab in colour, with the dots showing black; probably every moult is preceded by an obscuring of the dark internal organs, so that the colour at such times would always be paler.

A habitation of the larva depicted by Mr. Buckler represents an agglomeration of pieces of straw, &c., about 3 inches long, and more than half-an-inch wide.

The full-grown larva is 22 mm. in length, or 26 mm. when extended, and just 3 mm. across the back at about its middle; the figure is cylindrical, and the bulk very even throughout, except that the rounded head is rather narrower than the second segment, which is itself not so wide as the rest, being not so much puffed at the sides; it is noticeable, however, that the sub-spiracular ridge is less prominent than in *pinguinalis*; the skin is brilliantly glossy all over, but under the microscope is seen to be very finely and beautifully shagreened; the divisions between the second and third, and the third and fourth segments (as in *pinguinalis* and *farinalis* also) are curiously plicated, the folds broadening in a curve from the spiracular level to the centre

of the back; the general colour is from the sheen of the surface puzzling to describe, bronzy-invisible-green-black being the combination of words which suggested itself to three or four careful observers, the hinder segments having rather a paler tint; the head deep chestnut-red, the collar deeper red and edged narrowly in front with black, the anal plate reddish but paler than the head, sometimes with a yellowish tint: there is a double dorsal thread to be seen with a lens under the skin, being probably the borders of the dorsal vessel; the spiracles, which, except the first and last, are small, are oval in outline, flat, and quite unprotected by any fold, and are of the same colour as the ground; the usual dots, which are hard to detect, are slightly darker than the skin, and each has a fine hair which shines golden in the sunlight, the trapezoidals are arranged very slightly out of the square position, and the microscope detects several obsolete tubercles near them, as well as little rows of glittering foveolæ, which are very curious, and perhaps indicate the attachments of the muscles at a series of points.

The larva spins a tough web of white silk for the lining of its cocoon, the outside of which is stuck all over with bits of the straw and husks, among which it has lived; externally it measures about 15 mm. by 10 mm., the chamber within being about 12 mm. by 4 mm.; the pupa is 11 mm. long, cylindrical, all the outlines rounded, the wing-cases short and rounded, the abdomen rounded at the end, having there a very short blunt spike furnished with four curl-topped spines; the skin rather glossy, the colour pale mahogany-brown on the back, paler on the under-surface, the anal tip and spike dark brown.

In the newly bred moth the paler markings of the fore-wings have quite a pretty pinkish tinge on them; but in speaking of this point, as well as of the coloration of the various parts of the larva, I cannot help feeling the want of that certainty with which I used to rely on Mr. Buckler's unerring judgment in such matters, as well as that picturesqueness of detail generally, which used to invest the larvæ he described with quite a personality of their own.

Exeter: 4th August, 1884.

The "Entomologische Nachrichten."—This useful "fortnightly," now in its 10th year, lately showed signs of irregularity in appearance, and of falling off in the quality of its contents. It has become the property of Messrs. Friedländer & Sohn, and is now edited by Dr. F. Karsch, of Berlin. We think there are already indications of great improvement.—EDS.

A NEW SPECIES OF *NEMATUS* FROM ENGLAND.

BY P. CAMERON.

NEMATUS PURPUREÆ, sp. n.

Black, covered with close, pale pubescence; labrum, palpi, tegulæ, apical half of coxæ, femora at base and apex, tibiæ and tarsi, whitish-testaceous; flagellum brownish beneath; base of costa and of stigma clear white, the rest of costa and the stigma at apical half fuscous. Antennæ closely pilose, a little shorter than the thorax and abdomen together, the 3rd joint, if anything, longer than 4th. Clypeus incised. Antennal fovea large, deep, round, shining in the centre; frontal area obsolete; an indistinct fovea below the front ocellus; vertex raised, the lateral sutures broad, there is an indistinct transverse one behind. The head and thorax are finely punctured, not very shining, abdomen smooth. The 1st transverse cubital nervure semi-obsolete; 3rd cubital cellule longer than broad, of nearly equal breadth throughout; 2nd recurrent nervure received a little in front of 2nd transverse cubital. The lower median cellule in hind-wings shorter than upper. The femora have a more brownish tinge than the tibiæ or tarsi; the black is not continuous, being absent from the sides and to a certain extent from the lower portion. Tarsi more or less fuscous above (especially the hinder); cerci testaceous, as long as the hind spurs.

Length, 2 lines.

A narrower insect than *N. leucostigma*, and readily known from it by the black clypeus, much larger antennal fovea, darker costa, longer 3rd cubital cellule; by the 2nd recurrent nervure being received much nearer the 2nd transverse cubital, and by the more densely pilose body, which is also less shining. *N. nigrolineatus*, which agrees with it so closely in habits, is a larger insect; its legs are darker coloured, the femora and tarsi being for the greater part black, the stigma has the apical half black; the pronotum is edged with white at the base, the 3rd cubital cellule is dilated at the apex. In having the flagellum brownish beneath, it differs from most of the species.

The larva lives on *Salix purpurea*, the leaves of which are rolled down at the edges like what is done by *Nematus nigrolineatus* and *Cecidomyia clausila*. It is clear greenish-glassy, rather stout, becoming suddenly attenuate at the anus, and bears no black marks on the hind segments, thus differing from most of the leaf-rolling larvæ. The head is small and shining, clouded with grey, vertex black.

This interesting discovery we owe to that indefatigable observer, Mr. J. E. Fletcher, of Worcester, who found the larvæ near that place, and managed to rear the imagos.

Glasgow: August, 1884.

ON AN UNDESCRIBED BUTTERFLY OF THE GENUS *TERACOLUS* FROM ARABIA.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The British Museum has recently been enriched by the receipt of a fine collection of butterflies from Aden, and a smaller series from the Somali country, collected and presented by Major J. W. Yerbury; the smaller series contains both sexes of *Teracolus Chrysonome* of the "*Symbolæ physicae*."

Hitherto, *T. Chrysonome* has been represented in the Museum collection by an Arabian species allied to my Abyssinian *T. gaudens*, but smaller than any other species of the group to which it belongs; it differs at a glance from *T. Chrysonome* in its inferior size (34 instead of 38—41 mm. in expanse of wing), its paler and duller coloration on both surfaces, bringing it nearer to the *T. Fausta* group, the abbreviation of the black sinuous stripe across the primaries, and the larger, much more confluent, and pinker tinted markings on the under-surface of the secondaries: to this species I propose to give the name of *T. arenicolens*.

TERACOLUS ARENICOLENS, *sp. n.*

Upper surface sandy-ochreous, with the veins slenderly black; primaries white from the base to the end of the cell, slightly tinted with bluish on inner margin; a small, transverse, black discocellular spot; a bi-angulated, discal, black stripe from the costa, about half way between the cell and apex to the second median nervule; a squamose, blackish, sub-marginal stripe, best defined upon the veins; secondaries bluish-white at the base, otherwise finely irrorated with grey, with the exception of an elbowed discal series of spots and a marginal series between the veins; body blackish above, the abdomen pale sandy-brownish at the sides; primaries below pale saffron-yellow, becoming pale creamy sulphur-yellow on internal area and at apex; the upper surface markings represented in rosy greyish; a minute black dot on the interno-median interspace beyond the middle; secondaries pale creamy-yellow, traversed by four nearly equidistant series of sub-confluent, rosy-greyish, more or less fusiform, spots; body pale creamy-yellow. Expanse of wings, 34 mm.

♂. Arabia (*Becker*).

Type, Brit. Mus.

It is unfortunate that no more exact habitat was received with this species.

The true *T. Chrysonome* will have to be placed between *T. aurigenus* from Victoria Nyanza and *T. gaudens* from Abyssinia; the latter, which measures 46 mm. in expanse, is the nearest ally of *T. arenicolens*.

British Museum:

August, 1884.

NOTE ON THE ACTION OF POTASSIUM CYANIDE ON ORGANIC COLOURING MATTER.

BY G. B. BUCKTON, F.R.S.

The action of potassium cyanide, both as to discharging or altering the colours of insects, is worthy of the entomologist's attention. The phenomena may, however, be in the greater part explained, when we remember that water, or aqueous vapour, decomposes this salt into either caustic or carbonated alkali, with the simultaneous formation of ammonium cyanide, to the efficacy of which, in the state of vapour, the substance acts as an insecticide.

Mr. C. G. Barrett has lately described* the change of the yellow colour of *Gonopteryx rhamni* to a crimson under the influence of potassium cyanide. Alkalies are well known to convert many organic dyes into rich browns (as in turmeric), and into tints approaching to red, and advantage is taken of such action by way of chemical testing. Alkalies will destroy some colours altogether, and Mr. G. T. Baker† notes the bleaching of insect colours by cyanide in the last number of this Magazine.

In all cases where potassium cyanide is used as an insecticide by the entomologist, the specimen should be exposed only to the vapour disengaged slowly but surely from the damped salt placed between sheets of filtering paper. The vapour acts through the spiracles of the insects, in the *Hymenoptera* very rapidly, in the more sluggish nocturnal *Lepidoptera* much more slowly. I believe that I was the first to recommend this use of the alkaline cyanides, when I exhibited to the Biological section of the British Association at Liverpool, in 1854,‡ the identity of action in the vapour given off by crushed laurel leaves and that of decomposing potassium cyanide.

Care of course is necessary in using potassium cyanide in quantity; but it may be noted that bird and other natural history cases may be cleared from moth by a temporary but prolonged exposure to cyanide vapour, under which treatment *Tinea pellionella*, &c., surely succumbs.

Weycombe, Haslemere:

July 31st, 1884.

* Ent. Mo. Mag., vol. xxi, p. 23. † *id.*, p. 66.

‡ Report of the British Association at Liverpool, 1854, p. 106.

ON A NEW SPECIES OF *HETÆRIUS*.

BY GEORGE LEWIS, F.L.S.

In the area assigned to the European Fauna there are fourteen species of *Hetærius* known to us, five of these are found to the north of the Mediterranean basin, and nine to the south of it. Outside this region six are reported from America, and two from Japan; leaving the vast mainland of Asia (probably rich in species) *terra incognita* as regards the genus. The European species are:—

<i>Hetærius ferrugineus</i> , Oliv.	<i>Hetærius lioderus</i> , Fairm.
<i>Marseuli</i> , Bris.	<i>Bedeli</i> , Lew.
<i>arachnoides</i> , Fairm.	<i>pluristriatus</i> , Fairm.
<i>hispanus</i> , Rosenh.	<i>Lewisi</i> , Reitt.
<i>comosellus</i> , Fairm.	<i>lævidorsis</i> , Fairm.
<i>setulosus</i> , Reitt.	<i>grandis</i> , Reitt.
<i>punctulatus</i> , Luc.	<i>plicicollis</i> , Fairm.

Herr Reitter considers that *H. Sartorii* = *Eretmotus Rayei*.

The last addition to this list is:—

HETÆRIUS BEDELI, n. sp.

Subrotundatus, piceo-ferrugineus, vix dense sericeo-pubescent, punctulatus; fronte grosse punctata, emarginata; pronoto sub-transverso, parte anteriore dense sat grosse punctata, angulis anticis obtusis reflexis; elytris tristriatis, 1° integro, 2 ultra medium, 3° ante abbreviatis; pygidio piloso; prosterno grosse punctato, meso- et meta-sterno profunde excavatis; pedibus robustis, tibiis angulato-dilatatis. Long. 2—3 mm.

This species may be placed near *lioderus*, but it is very distinct from all on the list. Its colour and the density of its pubescence, the thickly set punctures on the anterior part of the thorax, its larger size and broad tibiæ, are its most conspicuous specific characteristics. The tibiæ are nearly as much dilated as those of *Eretmotus sociator* or *tangerianus*, and they are angulated in the same way, being much broader therefore than any other known species of *Hetærius*. At the base of each elytron there is a faint impression resembling an obsolete stria.

I am much pleased in naming this insect after Mons. L. Bedel, the captor of three examples at Daya, in the province of Oran, November, 1879, and to whose continuous researches in Algeria we owe the discovery of many novelties.

NOTE ON *HYDROBIUS FUSCIPES*.

BY D. SHARP, M.B.

In the Bulletin entomologique of the Annales de la Société entomologique de France, 1883, p. cxxxi, there is a note by C. G. Thomson, of which the following is a translation :

"*HYDROBIUS FUSCIPES*.—Under this name there are at present confounded two different species ; one, for which I preserve the ancient name *fuscipes* of Linnæus, is oblong-oval, not strongly convex, and has always the tibiæ and the extremity of the femora reddish-yellow ; the other, which I call *picicrus*, is especially smaller and shorter, notably more convex behind, with the tibiæ as well as the extremity of the femora pitchy, and the hind angles of the thorax form a more obtuse right angle. The diagnoses may be established thus :

"*H. FUSCIPES*.—*Supra olivaceo-niger, æqualiter leviter convexus, genubus, tibiis tarsisque ferrugineis, prothorace angulis posticis subrectis.*

"*H. PICICRUS*, mihi.—*Supra olivaceo-niger, præsertim postice convexus, breviter ovatus, genubus tibiisque nigro-piceis, tarsis ferrugineis ; prothorace angulis posticis obtusiusculis.*

"*Præcedente paulo minor, brevior, et magis convexus, tibiæ colore obscuriore, elytris striis fortius punctatis, prothorace juxta scutellum utrinque evidentius sinuato, angulis posticis minus rectis distinctus.*"

These two forms have long been distinguished by British entomologists, and attention was directed to them by Mr. Rye in a note published in 1871 in Ent. Mo. Mag., vii, p. 36, the var. *a* of Mr. Rye, *l. c.*, being the *picicrus*, Thoms. (Mr. Rye being, however, in error in stating that it has no larger irregular punctures on the alternate interstices), and considered by our countryman to be probably the *subrotundus* of Steph. (Ill. Mand., ii, p. 128). So far as the North of Europe goes, the two forms may be possibly distinct, for I find that, though the characters mentioned by the talented Swede are variable, there is another more important one to which he has not alluded, *viz.*, that in *picicrus*, Th., the pubescence of the hind femora is not quite so extensive, and the punctuation of which it is the accompaniment not quite so dense and fine ; but I do not think the two forms will hold good as distinct throughout the whole of the extensive area of the palæarctic and nearctic regions occupied by *H. fuscipes*.

The careful examination of aquatic beetles reveals, however, so much reason for supposing that creatures excessively similar to one

another may be really distinct—the slight characters being so free from connecting forms as to offer a presumption that there is no inter-breeding—that it may well ultimately prove that there are several extremely closely allied species mixed together as *H. fuscipes* in our collections, so that at present *Hydrobius picicrus*, Th. (? *H. subrotundus*, Steph.), may have the privileges of a good species in our catalogues. I have distinguished a Japanese form recently discovered by Mr. Lewis from *H. fuscipes*, on account of the greatly diminished punctuation of the hind femora; while, on the other hand, Horn has recently treated three of LeConte's North American species as being the same as the European *H. fuscipes*.

Shirley Warren, Southampton:

July, 1884.

NOTE ON THE BRITISH SPECIES OF *LACCOBIUS*.

BY D. SHARP, M.B.

I have just had occasion to examine some of the European species of this genus, and have revised the British specimens in my collection; as the result I find we have four species, viz.:—

1. *L. SINUATUS*, Motsch.
2. *L. ALUTACEUS*, Th.
3. *L. MINUTUS*, auct.
4. *L. BIPUNCTATUS*, Th.

1. *L. SINUATUS* is the *L. nigriceps* of Th., and as the determination of Motschoulsky's *L. sinuatus* as this species is pretty certainly correct, his name should be adopted. The species is abundant in England and Scotland, and may be readily distinguished by its larger size and more oval form.

2. *L. ALUTACEUS*, Th.—This, according to my experience, is the rarest of the four species, but I have nearly a dozen examples from widely separated localities, viz., Hammersmith, Kingsbury, Deal, Southend, Edinburgh, and Aberlady.

3. *L. MINUTUS*.—Very abundant in the pond in flower garden at Eccles House, Thornhill; I have only besides two other examples, found at Cambridge and at Horning, October.

4. *L. BIPUNCTATUS*, Th.—Somewhat local but occasionally abundant; Deal, Stony Stratford, Horning, Edinburgh.

The four species may be readily distinguished by the characters

given in Bedel's "Coléoptères du Bassin de la Seine," a work in course of publication by the Entomological Society of France, but which may be procured separately, and will be found by far the most useful work a British Coleopterist can obtain for his assistance. The specimens should be examined with a moderately high power of the compound microscope, a half-inch object glass is the best, so that the minute sculpture of the thorax may be seen, when reference to two characters is sufficient to determine the species, viz. :—

A. Thorax almost without any dense minute punctuation between the larger punctures.

1. Elytra irregularly punctate. *L. sinuatus*, Motsch. (*L. nigriceps*, Brit. Cat.).

2. Elytra quite regularly punctate. *L. bipunctatus*, Th. (in this species the pallid colour at the extremity of the elytra extends forwards at one point on each wing-case, so as to give the appearance of a pallid spot).

B. Thorax with a dense minute punctuation between the larger punctures.

3. Elytra irregularly punctate. *L. alutaceus*, Th.

4. Elytra quite regularly punctate. *L. minutus*, auct. (*Chrysomela minuta*, Lin.).

Southampton : August 5th, 1884.

DESCRIPTION OF THE LARVA OF *CRAMBUS CERUSSELLUS*.

BY GEO. T. PORRITT, F.L.S.

In the spring of last year Mrs. W. H. B. Fletcher found several larvæ "under stones" at Worthing which produced *Crambus cerusellus*; and this year Mr. Fletcher, whilst at Portland, found numerous similar larvæ (some of which he very kindly forwarded to me), which proved to be of the same species. I had several times received batches of the oval, bright, straw-coloured eggs from various friends, but had always failed to rear larvæ from them.

The larvæ reached me on May 6th, and were feeding on the roots of a short, stiff species of grass. Length about half-an-inch and rather slender; head highly polished, it has the lobes rounded, and is about the same width as the second segment; body cylindrical, and of nearly uniform width, being attenuated only slightly towards each extremity; skin smooth and rather glossy, the segmental divisions and the tubercles well defined. The ground-colour varies considerably; in some specimens being a pinky-flesh colour, in others greyish-brown, and in some dingy olive-green; the head also varies in different examples, in some being bright yellowish with brown mandibles, in others yellowish-brown, with the mandibles and the freckles on the lobes still

darker brown. There are absolutely no markings beyond a small black spot on each side the frontal plate, and the tubercles, frontal and anal plates, and the almost imperceptible spiracles, of a darker shade of the ground-colour. Ventral surface and prolegs uniformly of the ground-colour of the dorsal area, the anterior legs ringed with a darker shade.

Huddersfield : *August 7th*, 1884.

Note on Lycena Arion.—I feel quite certain that the haunt of *L. Arion* at Bolthead must be looked upon as a thing of the past. I visited the old familiar spot twice this year (28th June and 5th July), without seeing a single specimen. It is now more than twenty years since I first became acquainted with *L. Arion*: my first record in "The Entomologist" of my capture of 36 in one afternoon is in vol. ii, p. 295, and when I look back and remember the spot then and what it is now, it is no wonder they have disappeared. When I first visited the place, the fern, furze, and thyme held full possession of the slopes towards the sea—all, comparatively, have gone; the farmer who rents the ground has annually burnt the furze, &c., first one spot and then another; this, no doubt, is the principal cause, but we must also take into consideration the great assistance the elements have given to their extermination during the past seven years.

On the 17th June, 1865, when I captured the above-named species the wild thyme was in full bloom, the fragrance of the flowers, and the aromatic odour arising from running over the plants, made a lasting impression on me; many females I watched that day, and some since, flitting about depositing their eggs on the flowers on the thyme: but now all is changed, for on the 5th instant I could have carried all the flowers of the thyme I saw at Bolthead in my waistcoat pockets and found no inconvenience from the quantity. Although the eggs are laid on the flowers of the thyme and the larvæ feed upon them till the first moult, it is quite certain that it is not their food-plant, but what the food-plant is I am not prepared to state, yet I strongly suspect it is one of the small trefoils or a vetch.

I know *L. Arion* has been on the wing, for I have had the pleasure of seeing nine specimens taken during the first week in July by a gentleman who had visited Bolthead, but gave it up in disgust; he will not at present give the precise locality, for he says the place is so small, that one greedy collector would exterminate the species in a couple of seasons.—G. C. BIGNELL, Stonehouse : *July 25th*, 1884.

Vanessa Atalanta and urticae in Wellington, New Zealand.—According to a communication from Mr. T. W. Kirk to the Wellington Philosophical Society (*cf.* Trans. and Proc. New Zealand Institute, vol. xvi, p. 550) several examples of these common English butterflies were observed by him in 1881 in the Wellington Botanic Gardens, having, no doubt, been imported with plants.—EDS.

Protective mimicry in Argynnis Selene, &c.—Much interest has been taken of late in observing the wonderful way in which the markings of insects tend to conceal them in their native haunts, and it has often been remarked how insects will choose for their resting place the objects which blend best with their own markings.

I met with a curious instance of this in the case of *Argynnis Selene* about two years ago. Walking along a glade of Guestling Wood, I observed a head of the wood-rush (*Luzula glomerata*) which appeared very top-heavy. On looking closer, I saw that six specimens of *Argynnis Selene* were resting on it, and going a little further I found four specimens on another head of the same plant. I saw no more *A. Selene* at rest in that glade, and no more *Luzula*. It was curious to see how well the colours of the butterfly matched with the heads of the *Luzula*, and I doubt whether they would have attracted my attention had they not somewhat overdone it by congregating so thickly on these two heads.

A. Euphrosyne and *Selene* are said to have a second brood occasionally. Doubtless this is so, but I am not aware that I have ever met with specimens of the second brood of the former, though I have seen the latter not very uncommonly. Thus I met with several specimens of *A. Selene* on August 28th, 1880, and again on the same date, 1882. As far as I remember, the latest date on which I have seen *A. Euphrosyne* this year has been on August 1st, but this may not improbably be a late specimen of the first brood. On the same day I took *Argynnis Paphia* and *A. Adippe*, the latter much worn.

Though I have lived here and collected more or less for twenty years, this is the first occasion on which I have taken either of the above larger species of *Argynnis*.—E. N. BLOOMFIELD, Guestling : August 7th, 1884.

P.S.—I have to-day met with a fresh and bright specimen of *A. Selene*, no doubt one of the second brood.—E. N. B. : August 13th, 1884.

Eupithecia togata in Roxburghshire.—On the 21st June I took in this locality a specimen of *Eupithecia togata*, and two others on the 24th of the same month, which were in the finest possible condition, apparently just emerged. I sent one of these to Mr. Barrett, who at once pronounced it to be a fine specimen of *Eupithecia togata*. As this species is excessively local, perhaps a note of locality where taken may be of some interest. I was crossing through a rather extensive plantation of Scotch and spruce firs, and when near to its southern aspect I came upon an open glade, surrounded principally by large spruces, their branches coming close down and sweeping the ground; and in passing one of these I noticed a specimen of what turned out to be *Eup. togata* flutter through the lower branches, presently clearing them, only however to be netted. I returned to the same locality a few days afterwards and beat the lower branches of the large spruce firs, with the result of taking two more fine specimens, and I have not made another trial since. The trees at that particular place are large old spruce and Scotch firs, the former predominating. *Eup. castigata* was here also numerous, and *Coccyx hyrciniana* abundant, and I took a fine specimen of *Cilix spinula* as it left one of the spruce firs.—A. ELLIOT, Samies-ton, Jedburgh, N. B. : July 19th, 1884.

Note on Sophronia parenthesesella.—On the 25th July, about 10 p.m., among many *Crambi* which had flown in to the lights in the room was one moth which I did not at first particularly notice, but after a while I was attracted by its quietude, for, as if paralyzed at its own audacity in taking an unusual course, it lay motionless, though unhurt, on the white tablecloth, and could hardly be persuaded to enter the covert of a pill-box presented to it, when I recognised it as a representative of an old friend I used to meet at West Wickham 30 years ago, *Sophronia parenthesesella*.

Certainly I should never have expected to be thus confronted in my own house with a living reminder of the adventures of a former generation of men and moths, and I was startled with this apparition clothed with scales so unexpectedly, on both sides, introduced. Yet it was a dumb visitor, and gave no answer to the question, whence came you? My acquaintance with the tribe and family to which the quasi-tourist belongs has long been attenuated, and, therefore, I am not in a position to say if a nearer locality than West Wickham (8 miles off) is now known for the species; this individual was neither worn nor travel-stained, and might very recently and close-by have been born, bred and come out of its chrysalis. The mystery of its native place might be less if the food of the larva were known, but this part of the history is still in abeyance.

Some insects, from causes over which they have no control, are involuntary migrants, and prosper thereby, or the contrary: I believe that some insects get an assisted passage by railway, or it may be termed a free pass—they enter a railway carriage and are carried a hundred miles before they leave it, besides, when the materials of which an embankment is formed are removed from a distance, the insects attached to the plants thereon are, in some stage of their existence, removed therewith, and take kindly to their new locality. And so, by the railway which now reaches from here to West Wickham, this *Sophronia* may have arrived.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: August 4th, 1884.

Note on Eupteryx abrotani.—On the 13th of August, 1874, I was, with a companion who knew the ground well, on the moor near West Kilbride, Ayrshire; after a bright, hot morning wind and clouds came up from the sea and brought rain well worthy of the name. We sought shelter in the lone dwelling of a shepherd, and while waiting I sallied out during a lull to try if there were any insects in a bush of *Artemisia abrotanum* in the garden. A shower of wet came into my net, and with it a quantity of small *Homoptera* in all stages of life, which were at once fixed on the wet surface, but I managed to bottle some twenty perfected *Eupteryx abrotani*, an undescribed species, and quite new to me (*cf.* Ent. Mo. Mag., xi, 118). I also was long fixed by the rain, but, like the hero of the immortal tale "Tam o'Shanter," of whom, when weather-bound, it is said—

"The storm without might rair and rustle,
Tam did na mind the storm a whistle,"

I was indifferent to that, as well as to the soaking which I got in going to Saltcoats, my consolation, like Tam's, being derived from the contents of the bottle.

On the 27th of June last, on the boundary fence of my garden, I detected a solitary individual of this same species, but only one. There is no question that the species is attached to *Artemisia abrotanum*, a common cottage plant; the curious thing is that it so rarely occurs and that I should now get it, not on the plant but at a distance from it, for although there is a plant of the *Artemisia* in the garden it is far away from the place of capture, and neither at the time, before, or since has there been an *Eupteryx* on it. My wanderer, I feel sure, came not thence, for all the species of the genus are gregarious; *Artemisia maritima*, a coast plant, on which the species has been found, of course is not here, nor is there, as far as I know, any other *Artemisia* at hand, yet, I apprehend the foster-plant was not very far off. Ten years ago I had to go 500 miles to see the little beauty, now I find it at my own door, not having seen one alive in the interval.—ID.: Aug. 13th, 1884.

Botys hyalinalis bred from the egg.—On the 27th of last July, my son being down from London, we took a ramble through the woods near Charing, a few miles from here. The weather was fine till soon after reaching our hunting ground, when a succession of heavy showers forced us to take shelter, consequently, the afternoon found us retreating with empty boxes, bewailing our bad luck, when a moth was disturbed, which I saw at large for the first time. This was *B. hyalinalis*, and my spirits revived as I remembered it was still unknown in the larva state, and I might now have the chance of working out its life history. We accordingly tried for more, and several females being secured, eggs were obtained, which were shared with my late valued friend, Mr. William Buckler.

A subsequent visit to the spot on bank holiday, August 6th, enabled me to obtain a few more eggs. Of the numerous plants given to the young larvæ as they hatched, the one decidedly chosen was knapweed (*Centaurea nigra*); in this the experience of Mr. Buckler and myself coincided. I think we may fairly conclude it is the right food plant, as many larvæ were successfully fed upon it, and after spinning up in dry beech leaves for the winter, renewed their attack on the knapweed in early spring. On the 6th of July I had the pleasure of rearing two moths, both males, and on the 13th a female. Particulars as to the habits of the larvæ, with description, may well be reserved for a future paper, which is in course of preparation.—W. R. JEFFREY, Ashford, Kent: *July 22nd*, 1884.

Dichrorampha sequana, and others of that genus, bred from tansy roots.—I dug up some tansy roots on the south coast during the winter, in the hope of rearing *Dichrorampha alpinana*, of which I took two or three worn specimens on the spot last July. The result is that I have reared a few *alpinana* (which, however, came out very slowly), a few *politana*, a few *Petiverella*, nine *sequana*, and some exceedingly fine and handsome *tanacetii*, with, of course, many ichneumons. The *tanacetii* show the markings of the species very much more distinctly than the captured specimens which I have in my cabinet, and some of the females have exceedingly dark hindwings.—GEO. ELISHA, 122, Shepherdess Walk, City Road: *July*, 1884.

A new food-plant for *Depressaria Weirella*.—I have reared this species from hemlock (*Conium maculatum*) within the last few weeks. The larvæ were collected along with those of *Alstræmeriana*, and were all supposed to be of the latter species. I saw numbers crawling about their cage one evening just before changing their food, and if they had shown any particular differences, I must have noticed them. All were bright green and very similar, and they fed in the same way—folding the leaves—so that I was much surprised when this dark species emerged. The two species were in about equal numbers, but *Weirella* appeared first, and was just over as *Alstræmeriana* began to emerge.—ID.

Zeuzera asculi flying in the day-time.—The larvæ of this species feed here in the stems of the lilacs, but the imago is not often found. I have more than once seen an individual take a low, short flight by daylight from one bush to another and there settle, but I thought that this was an involuntary migration, caused by the intrusion into the lair of the Wood-leopard of a cat or troublesome sparrow, and that a place of rest from the wicked one was being sought. To-day, however, at 2 p.m., when the sun was shining brightly, a *Zeuzera*, as if voluntarily, flew leisurely past me, took a turn over the lawn, then mounted spirally and settled in an acacia tree, 25 feet from the ground, evidently in the ascendant mood, and taking part in the

acting-charade of *Altiora peto*:—and a very curious figure it was, its long body pendant, and its wings seen distinctly vibrating in the *Excelsior* course.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: June 29th, 1884.

Adicella flicornis, Pict.; an addition to the British Trichoptera.—On the 14th of June last, on the occasion of the excursion of the Glasgow Natural History Society, I captured by the river Mouse, near Cleghorn, Lanarkshire, a single ♂ of *Adicella flicornis*, Pict., a species of *Leptocerida* new to our lists. During the latter part of the same month the locality was visited by Mr. King, of Glasgow, and myself, and a small number of both sexes were taken by each of us. They were obtained by sweeping the vegetation about a rock-spring. Only two or three examples were seen on the wing when the sun was shining brightly; the flight was very lazy.

A. flicornis may readily be distinguished from the only other British (and known European) species of the genus by the almost black pubescence of the wings. The Mouse is one of the larger waters which fall into the Clyde. About Cleghorn it flows through a very deep rocky glen, the sides of which are thickly wooded. Well sheltered, it is a good locality for Caddis flies, and produces *Diplectrona felix*, *Crunaccia irrorata*, *Tinodes aureola*, and many other species.—KENNETH J. MORTON, Carlisle, N.B.: August 9th, 1884.

[*A. flicornis* has a very wide continental distribution, but southern rather than northern. I have taken it on several occasions, but mostly only singly.—R. McL.]

The electric light as an attraction for Trichoptera.—One evening in July, 1881, I was at Spa, in Belgium, in company with Baron de Selys-Longchamps and his family. There was a fête, and as part of the attractions to visitors an electric light was used. It was also attractive to insects, for the man in charge was obliged to keep continually brushing them away. *Those insects were mostly Trichoptera*. On Monday evening in the present week I arrived in Paris from the south; it was the occasion of the "Fête Nationale," and I took two hours' stroll to see the illuminations. At the Place de la Concorde, four electric lights were so placed as to throw their rays on the four sides of the Obelisk of Luxor from a considerable distance. Close to the lights it became evident that a multitude of insects, appearing like silvery atoms as they entered within the limits of the rays, were attracted by them. I inspected the masonry against which three of the lights were fixed. It was simply covered with insects, and again they were *almost entirely Trichoptera*, mostly *Leptocerida*. My collecting bottle was not in my pocket; but even if it had been I might have thought twice before attracting the attention of the mass of humanity everywhere about by using it. The carbon points were exposed, but it did not appear to me that the insects immolated themselves against them as is usually the case at an ordinary light; the heat seemed to cause them to drop before they had damaged themselves. I was greatly surprised at the small number of *Lepidoptera*; the only other insects in any abundance were sundry small green *Homoptera*.—R. McLACHLAN, Lewisham: July 17th, 1884.

Trichoptera from Unst, North Shetland.—Mr. C. A. Briggs has been so kind as to send me a few *Trichoptera* collected by himself in the above-named remote portion of the United Kingdom last month. They are: *Limnophilus sparsus*, Curt., *Stenophylax latipennis*, Curt. (apparently common), *S. concentricus*, Zett., and *Plectrocnemia conspersa*, Curt., all well-known species, but all are remarkable for small size and dark coloration. Records of any species (even the most common) from the Shetland Islands are desirable.—Id.: August 2nd, 1884

THE *NITIDULIDÆ* OF GREAT BRITAIN.

BY REV. W. W. FOWLER, M.A., F.L.S.

(Continued from page 58.)

NITIDULINA.

I. Prosternum depressed behind anterior coxæ, not produced.

1. Antennal grooves convergent, the convergence varying in degree.

i. Tarsi dilated on all the feet; disc of thorax smooth.

A. Labrum bilobed; males with 6th dorsal segment.

a. Thorax widely margined.

α. Posterior-legs approaching one another *EPURÆA*.β. Posterior-legs considerably separated... .. *OMOSIPHORA*.b. Thorax with hardly perceptible margin *MICRURULA*.*

B. Labrum only feebly emarginate; males without 6th segment...

NITIDULA.ii. Tarsi not dilated; disc of thorax with impressions *SORONIA*.

2. Antennal grooves parallel, or nearly so.

i. Front very strongly lobed; mandibles bifid at apex *AMPHOTIS*.ii. Front not lobed; mandibles not bifid, but with a strong tooth about a third from apex *OMOSITA*.

II. Prosternum produced behind.

i. Head without antennal grooves, or with very indistinct ones.

a. All the tibiæ simple *PRIA*.b. Front tibiæ simple; hinder pairs of tibiæ furnished with spines...
THALYCRA.

ii. Head with distinct antennal grooves.

a. Tarsi not dilated; front tibiæ simple, produced into a strong point externally at apex *POCADIUS*.b. Tarsi all dilated; front tibiæ more or less strongly, and very variably toothed *MELIGETHES*.

With the exception of *Ipidia*, which does not belong to our fauna, the genera as above given are the same as those comprised in the tribe *Nitidulina*, of Erichson (*Naturgeschichte der Ins. Deutsch.*, iii, 139). Thomson separates the tribe into three: the *Meligethina* containing *Pria* and *Meligethes*; the *Thalycrina* containing *Pocadius* and *Thalycra*; and the *Nitidulina* containing *Amphotis*, *Omosita*, *Soronia*, *Nitidula*, and *Epuræa*. The tribe, however, as above given, is easily distinguishable from the preceding by the abdomen being almost, if not entirely, covered by the elytra, and from the next (*Cychramina*) by the thorax only fitting closely to the base of the elytra, and not covering it.

EPURÆA, Erichson.

This genus is one of the most difficult of all our genera; some of the species are very distinct, so much so that they have been held to form separate genera; two of these have been adopted above, and with

* Previously *MICRURIA*: cf. Wiener Ent. Zeitung, iii, 209. (August, 1884.)

almost as much reason a third might be introduced—*Dadopora*, Thoms., to include *E. decemguttata* and *E. diffusa*; other species, however, come exceedingly close to one another, and it is almost impossible to distinguish them, except by comparing them with authentic types: all the species are more or less testaceous or reddish in colour, and the males have a distinct extra abdominal segment. *E. silacea* is the largest (2 lin.), but it is hard to say which is the smallest, as some of the species (e. g., *E. æstiva*, *E. deleta*, and *E. obsoleta*) vary in size in a remarkable degree; this is especially noticeable in a large picked series, such as that of Mr. Rye, whose whole collection of this genus has been very kindly lent me by Mr. Mason, together with those of Mr. Wilkinson, and others in his possession. The species live under bark, at flowing sap, and in flowers, and to a certain extent they may be separated by their habitat; this point, however, must not be pressed too far, as the flower-frequenting species (e. g., *E. florea*) are occasionally found at sap.

Although no division of this genus has been found that is quite satisfactory, yet the following hints concerning some of the chief points of difference between the species may be of some practical use.

I. Tibiæ widely dilated at base; intermediate coxæ almost contiguous; hind femora in male either furnished with a blunt tooth or thickened (*Dadopora*, Thomson).

E. decemguttata, Fabr.—Rather a large species, distinguished at once by its contour, which is oblong-ovate, its colour, and its thick legs; the thorax has light margins, with the disc more or less dark: the elytra are dark, except the margins, which are very plain, and five testaceous spots on each, three on the margin, a long one at apex, and one behind the middle; occasionally they are confluent: the male has the posterior tibiæ excised at apex, and the posterior femora are armed with a blunt tooth or projection.

Length, $1\frac{1}{2}$ —2 lin.

Found at sap of oaks, &c., but is usually connected with the burrows of *Cossus ligniperda*. Dunham Park, near Manchester, New Forest, Shirley, Addington, Birdbrook, Sherwood Forest, Swansea; a very local species.

E. diffusa, Brisout.—This species, which was separated by M. Charles Brisout de Barneville (Grenier, Catalogue des Coléoptères de France, 1863, p. 46), is very like the preceding, but it is a great deal smaller, and the spots on the elytra are not nearly as well marked, and sometimes are so confluent that the elytra appear almost entirely testaceous; the elytra are somewhat more acuminate at the extremity than is the case with the preceding species, but this is not a marked character. In the male the posterior tibiæ and femora are rarely more than thickened.

Length, $1\frac{1}{4}$ lin.

It is a question whether this is anything more than a small variety of the preceding species; the only structural character that gives it

a claim to rank as a separate species is the fact that the male is said to have simple hind tibiæ and femora ; this, however, is not always a constant character ; in one of Mr. Wilkinson's specimens, which is undoubtedly *E. diffusa*, the hind tibiæ and femora are formed as in *E. decemguttata*, and the latter insect varies in the characters of these parts in degree, and also varies considerably in size. A male specimen of Mr. Rye's, now before me, is placed by him as intermediate between the two species, and this specimen and the one above referred to, form very good connecting links, and shew that, however far apart the extremes of each series may seem, yet it may be very hard, if not impossible, to separate the species altogether.

It is found under the same circumstances and in company with the preceding ; Addington and Shirley, in *Cossus* burrows. Mr. Chappell has taken it at sap of oak exuding from *Cossus* burrows in Dunham Park, near Manchester, with *E. decemguttata* ; Mr. Reston has taken it at Stretford, near Manchester, flying over a wood yard ; it is decidedly uncommon.

Although M. Brisout first gave a detailed description of *E. diffusa* as a separate species, as above-mentioned, yet it must not be forgotten that it is the *var. minor, elytris immaculatis* of Waterhouse's Catalogue, and the *E. fuscicollis*, of Stephens ; the specimen from which it was originally described (taken by Mr. Waterhouse) was entirely testaceous, with dark thorax, and so it obtained its name.

II. Tibiæ, at most, slightly dilated at base, intermediate ones often sinuate in male ; intermediate coxæ moderately separate ; all the femora simple in both sexes.

- i. Upper- and under-sides entirely testaceous, or rufo-testaceous, unicolorous ; disc of thorax not darker than margins. (Occasionally these species have a dark spot or two towards the apex of the elytra, but this is usually deceptive, being caused by the folding of the wings against the semi-transparent elytra.)

A. Species more or less oval and convex ; anterior margin of thorax strongly emarginate.

a. Antennæ with the last joint broader than the penultimate.

E. æstiva, Linn.—This species may be distinguished by the large apical joint of the antennæ, which is always broader than the penultimate ; antennæ unicolorous ; thorax with distinct, but not broad, margins, sides rounded, and somewhat narrowed towards apex ; there is often a round darkish spot on each elytron in this species, but it is usually deceptive ; all the tibiæ simple in both sexes ; punctuation close and fine, but distinct.

Length, 1—1½ lin.

Very common in flowers everywhere, especially in hawthorn blossom in spring. Mr. Chappell tells me that he has found the larvæ

plentiful in a nest of *Bombus lucorum*, which he put into a tin, and from them reared a large number of the perfect insect in the following spring.

b. Antennæ with last joint narrower than the penultimate.

E. melina, Er.—Easily distinguished from the preceding, which it most closely resembles, by its much stronger and less close punctuation, the black club of its antennæ, and its darker colour. Erichson says of this species that the “legs in both sexes are simple.” Thomson says that the “male has the intermediate tibiæ sinuate.” I have examined a number of specimens, and Dr. Power has kindly examined his series for me, and all these have the intermediate tibiæ simple: this is only one out of many points on which authorities are found at variance in this genus.

Length, 1½ lin.

Found, like the preceding, in flowers, especially hawthorn, but much rarer. Bowdon near Manchester, Wimbledon Common, Caterham, Mickleham, Darenth, Amberley, Claygate, Holm Bush, Dulwich, Brethby near Repton, &c.

E. silacea, Er.—The largest species of the genus; flatter than the two preceding species, with much wider and stronger margins to the thorax; sides of thorax narrowed in front, contracted and almost sinuate just before posterior angles; punctuation not so strong as in *E. melina*, but stronger than in *E. æstiva*; antennæ unicolorous, last joint hardly narrower than the preceding; apex of elytra truncate; male with intermediate tibiæ sinuate.

Length, 2 lin.

Very rare; Mr. Champion has taken it at Aviemore at sap of birch (Thomson considers it as exclusively attached to flowers); it has also occurred at Braemar, and in a rotten birch stump at the foot of Cross Craig, near Camachgouran, Rannoch; it seems to be exclusively a northern species. *

B. Species strongly oblong; anterior margin of thorax almost straight, or feebly emarginate.

a. Punctuation extremely fine, almost invisible.

E. oblonga, Herbst.—A light coloured species, easily distinguished from the two succeeding by its extremely fine and close punctuation; side margins of thorax very distinct, especially in front; sides of thorax more dilated in front than in the next two species, last joint of antennæ distinctly narrower than penultimate; male with intermediate tibiæ sinuate.

Length, 1½—1¾ lin.

Rare; Dunham Park, in cracks of Scotch fir, Mr. Chappell; Braemar, Shirley, sap of pine, Mr. Champion; Shirley, under bark of felled pine, Mr. Rye.

b. Punctuation distinct.

E. longula, Er.—Distinguished from the preceding by its stronger punctuation and dark, almost black, club of its antennæ; and from *E. florea* by having the anterior margin of the thorax distinctly, though slightly, emarginate, by its rather

longer and narrower form, by the side border of the thorax being much broader, especially towards the base, and by the dark club of the antennæ; male with anterior tibiæ sinuate.

Length, $1\frac{1}{2}$ lin.

Not a common species; Nettlecomb (Somerset), Tilgate Forest, Esher, and other places in the London District. Found in flowers.

E. florea, Er.—Rather a shorter and usually darker coloured species than the two preceding; punctuation distinct; anterior margin of thorax straight, with hardly a trace of emargination, sides of thorax narrowly bordered; antennæ unicolorous, club not darker; male with intermediate tibiæ sinuate.

Length, $1-1\frac{1}{2}$ lin.

Robin's Wood Repton, Hampstead, Norwood, Cowley, Wimbledon, Weybridge, Esher, Whitstable; found both at flowers and sap. Mr. Reston has taken it on Chat Moss, on *Umbelliferae*. Not an uncommon species, but local.

- ii. Upper-side spotted or flecked with black; darker portions often ill-defined; sometimes the whole surface of a dark red unicolorous colour, with disc of thorax (except in immature specimens) darker than the margins; under-side more or less dark.

- A. Sides of thorax gradually becoming wider for two-thirds or more of their length from apex, thence contracted to base, sometimes distinctly sinuate at point of contraction.

E. deleta, Er.—Testaceous, with suture and apex of elytra usually dark, the dark colour at apex often enclosing two light spots; it is a very variable species, both in size and colour; in Mr. Rye's series there is a specimen entirely of a light testaceous colour, and about $\frac{3}{4}$ lin. in length, and several others that are very different from the type; these may easily be distinguished from specimens of *A. æstiva*, which they somewhat resemble, by the shape of the thorax, which has its sides almost obliquely cut off from apex to within a third of base, and from thence contracted with a strong sinuation; the last joint also of the club of the antennæ is narrower than the preceding, whereas in *A. æstiva* it is broader.

Length, $\frac{3}{4}-1\frac{1}{2}$ lin.

A very common species in fungi, especially boleti, near Lincoln, where it generally occurs in company with *Gyrophoræ*; it also is found at sap of oak, pine, &c.; Mickleham, Darenth, Shirley, Loughton, New Forest, Rannoch, Aviemore, &c. Common, and generally distributed.

E. parvula, Sturm.—A very dark species, often almost black with margins of thorax and elytra only lighter; sides of thorax almost as in *E. deleta*, except that they are slightly waved and uneven, which is a peculiar characteristic of this species; before the base of thorax there is a strong sinuation; in many respects it comes close to *E. obsoleta*, but may be easily distinguished from that species by its more flat shining appearance, dark colour, and by the more pronounced margins of the thorax and elytra, as well as by the shape of the thorax, and also by the fact that the intermediate tibiæ of the male are simple.

Length, $1\frac{1}{2}$ lin.

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A very local species, but somewhat plentiful where it occurs; I have found it in numbers in Sherwood Forest with Mr. Matthews, by shaking faggots over a sheet, also a smaller variety by beating faggots of a species of *Tilia* (called "bass" by the country people) in Langworth Wood, near Lincoln; Stretford, flying over old wood-yard, Mr. Reston; Aviemore; Darenth, faggot stacks, Mr. Champion; also taken near Scarborough. It will be noticed that the habitat of this species is rather peculiar.

E. immunda, Er.—This species is very little known, and others are perpetually made to do duty for it in collections; it is perhaps best distinguished superficially by the colour; the apex of the elytra and the sides, for the greater part of their length, are suffused with dark colour, and the space of the elytra enclosed within is testaceous; this, however, is not always the case; the margins of the thorax are narrow, of the elytra very pronounced; the thorax is contracted towards base with a sinuation, and is as broad as the elytra without the margins, which make it appear narrower. From *E. deleta*, which it approaches in some points, it may be distinguished by its colour and the darker club of its antennæ; from *E. obsoleta*, with which it is most often confounded, it may be separated by its broader form, and by having the last joint of the antennæ about as broad as the penultimate, whereas, in *E. obsoleta* it is distinctly narrower; the thorax also is slightly more contracted at base than in the latter species. Male with intermediate tibiæ sinuate.

Length, $1\frac{1}{4}$ lin.

A very rare species. Mr. Champion has taken it at sap of birch at Aviemore and Invercannich, Scotland, and Messrs. Wilkinson and Lawson at Scarborough.

E. variegata, Herbst.—A very distinct species of a dark red-rust colour, with transverse evenly rounded thorax, which is strongly contracted at base, the base being much narrower than the base of elytra; the sides show no trace of sinuation; each elytron has a strong blackish spot in the centre, and a smaller and more obscure one at apex; punctuation distinct, rather strong; male with intermediate tibiæ simple.

Length, $1\frac{1}{4}$ lin.

A very rare species; Aviemore, Scarborough, Surrey; found at sap or under bark.

E. obsoleta, Fabr.—One of the most difficult species of the genus to determine; variable both in size, colour, and to a certain extent in structure of thorax, and in consequence often confounded with other species; the elytra are, as a rule, obscurely marked with dark patches, but occasionally the whole insect is of a reddish colour, and may in that case be confounded with species belonging to the first group, as *E. florea*; from this species small unicolorous examples of *E. obsoleta* may be distinguished by the plain emargination of the anterior margin of the thorax, and by the dark club of the antennæ; from *E. pusilla*, which it often closely resembles, *E. obsoleta* may be distinguished by the emargination being much less, by its truncate elytra, more rounded sides, and narrower margins of thorax, and by the dark club of its antennæ; from other neighbouring species, such as *E. parvula*, it may be separated by the sinuate intermediate tibiæ of the male.

Length, $\frac{3}{4}$ — $1\frac{1}{4}$ lin.

Shiere; Burnt Wood, Staffordshire; Dunham Park, Manchester, under chips in the midst of exuding sap; 'New Forest; Darenth; *Cossus* trees in Addington Park; Aviemore and Forres; not an uncommon species, but local.

B. Sides of thorax strongly rounded in front; not contracted behind.

E. neglecta, Sturm.—One of the most distinct species of the genus; like *E. parvula* in colour, dark, with the margins of thorax and elytra light; easily distinguished by its very narrow thorax, which is twice as broad as long, rounded in front and not contracted at base; base fully as broad as the base of the elytra; elytra narrowed towards apex; punctuation strong, almost rugose. Length, $1\frac{1}{2}$ lin.

Very rare; in Mr. Rye's collection there is one specimen with no locality attached; * Dr. Power possesses one or two specimens from the Holt (Selborne); in Mr. Champion's collection it is not represented; in Mr. Rye's collection there are two doubtful specimens placed on one side under *E. neglecta*; one appears to be rather an abnormal *E. parvula*, and the other, except as regards size, agrees in many points with the description of *E. pygmaea*, Er., which has not hitherto been recorded as British (Stephens' *E. pygmaea* being only *E. aestiva*); whether, however, it really belongs to this species has yet to be ascertained.

C. Sides of thorax almost parallel, at most very slightly contracted at base.

E. pusilla, Er.—A long and rather narrow species, distinguished by the anterior margin of the thorax being very strongly emarginate, and the anterior angles in consequence very prominent, by the very slightly rounded almost parallel sides of the thorax, and by the rounded apices of the elytra; the elytra usually present more or less cloudy dark markings, and the disc of the thorax is generally darker, but pale examples are very common; these, however, are easily distinguished by the above characteristics, and by the fact that all the tibiae of the male are slightly curved, and the intermediate ones very strongly sinuate. Length, $1\frac{1}{2}$ lin.

A common species at sap, and under bark of stumps of felled trees, pine, oak, &c., both in England and Scotland.

E. angustula, Er.—Very distinct, easily separated by its narrow, oblong form, long, parallel-sided, almost quadrate thorax, and dark rufous, sometimes almost black colour; out of a series of eighteen examples that I have before me, there is one entirely testaceous, but this is evidently an immature specimen; from small examples of *E. pusilla* this species may be distinguished by the dark club of its antennae, and also by the fact that the thorax is wider in front than behind, and the sides slightly converge to base in almost straight lines; in *E. pusilla*, as in all the other species of *Epuræa*, the posterior margin is wider than the anterior.

Length, $1-1\frac{1}{2}$ lin.

Very rare. Scarborough, Mr. Lawson and Mr. Wilkinson; one specimen near Shiere, Dr. Capron; one specimen under bark of beech in Dunham Park, Mr. Chappell; Mr. Reston has taken it by sweeping on Chat Moss.

(To be continued.)

* This was an old specimen from Mr. G. R. Waterhouse's collection. The "two doubtful specimens placed on one side under *E. neglecta*" were never supposed by me to have any relations with that insect; they were simply put aside in a convenient space.—E. C. Rye.

LIFE-HISTORY OF *BOTYS HYALINALIS*.

BY THE REV. J. HELLINS, M.A. (ASSISTED BY W. R. JEFFREY).

On July 27th, 1883, Mr. W. R. Jeffrey captured a female moth of this species, which deposited her eggs between July 30th and August 2nd; the larvæ hatched August 11th, and on being supplied with leaves of various plants growing in the locality where the moths were flying, soon showed their preference for those of *Centaurea nigra*, at once spinning little webs along the side of the midrib towards the stem; they ate away the under-side, leaving the upper cuticle untouched, and thus making little transparent blotches, which showed where they were feeding; they were, however, themselves so glassy and translucent, that they were most difficult to detect, and hence several were lost or destroyed in changing their food: they continued to grow till the beginning of October, and as it then became apparent that they would hibernate, Mr. Jeffrey supplied them with dry beech leaves, on which they soon constructed their tough hibernacula, and were afterwards placed out of doors with a potted plant of *Centaurea*; about the middle of December, during mild weather, it was noticed they had nibbled some of the leaves, but the larvæ themselves were not seen. In January, 1884, I received Mr. Buckler's stock of hibernating larvæ, some ten or twelve in number, but did not examine them for some time: on March 8th I opened a little web, and found the enclosed larva quite dormant: soon after this they must have begun to feed again, for on March 19th Mr. Jeffrey found a *Centaurea* leaf nibbled asunder near some loose spinning of silk, and on the 31st, I found similar indications of my larvæ being at work: on April 7th, in the evening, I examined my growing plant of *Centaurea*, and saw that I had three larvæ alive and feeding, apparently still using their hibernacula for hiding places, and spinning short galleries from them to the tender young leaves just shooting out of the earth, the whole substance of which they ate in the usual way; one of these larvæ was about to moult: on May 8th I found them full grown, and during the next fortnight they spun gauzy cocoons, and became pupæ during the first week in June; unfortunately, I kept them too dry, and bred only one moth, June 27th; Mr. Jeffrey's larvæ were rather later in their dates, becoming pupæ towards the end of June; and he bred the moths July 5th—13th, and again captured the moths flying at large on July 31st.

The eggs are described as being deposited in little patches, somewhat overlapping each other; they are flat in form, of a pale honey

colour, and so transparent that the development of the larvæ within could be plainly watched; thus, in about a week the eyes could be seen, and in two or three days more the organs of the mouth were visible, and an undulatory motion of the whole body was set up, as if the larva was feeding on whatever fluid remained in the egg shell with it. The newly-hatched larva is glassy or translucent; in about five weeks time it has become greenish, with black spots, and reminds one of the larva of *S. olivalis*; at about the age of two months, when 9 or 10 mm. in length, they spin their hibernacula, which are very tough flat cocoons of roundish outline, some 10 mm. in length by 7 or 8 mm. in width, and made of thin but very close-woven pale grey silk; the larvæ during hibernation seem to become dingy, for the one I examined was reddish-brown in colour, with the spots large, prominent, and glittering, but as three-fourths of my stock did not feed again in spring, it may be this dingy colour which I noticed was not the colour of health during the hibernating stage. After the last moult I made notes of the larva at two dates; in April, just as it was beginning to feed again, it was about 11 mm. long when at rest, 14 or 15 mm. when in motion, of shortish fat figure, stoutest about segments six and seven, and thence tapering dorsally in a curve to either end; colour all over dull opaque white; head horny, pale yellowish-brown, mouth darker brown, a small dark spot on the top of each lobe; the collar, which covers the whole of the back of the second segment, paler than the head; anal plate not distinguishable; the usual dots small and black, placed on pale Indian-ink warts, which glitter brilliantly; the front pair of the trapezoidals on each segment are on the largest warts, which are in outline stumpy pear-shaped, having the broad ends turned inwards towards one another, and the blunt stems pointed outwards and backwards; the hinder pair of trapezoidals are placed on paler and narrower warts (growing broader in figure on the hinder segments), which have their long diameter placed transversely; each dot bears a pale brown bristle; the dorsal vessel appears as an interrupted fine brown thread on the latter half of each segment, and there is a little transverse streak of the same tint at each segmental division, and also at the middle wrinkle of each segment; the spiracles appear of the ground colour ringed with brown.

Early in May the full grown larva is about 16 mm. long when at rest, and quite 22 mm. when extended in walking, 3 mm. wide at segment seven, where it is stoutest; the colour is still dull opaque white, with perhaps the faintest tinge of green; the dorsal region with a faint shade of black from the internal vessels; the head very

pale reddish, with a dark dot on the top of each lobe, and another dot on each cheek; the collar now with scarce any reddish tinge at all, but showing its dots distinctly, namely, a row of six small ones close to its front edge, about the middle on either side a double dot like a figure of 8, and then a transverse row of eight dots varying in size, and lastly, a pair near the dorsal line just on the hinder edge; the belly is now of a yellowish-white, the spiracles black, the thoracic legs rich brown; the dots and warts just as before, perhaps more prominent, and as the lateral and ventral dots, as well as the dorsal, are all placed on shining warts, the effect is striking.

The cocoon is regular in figure, about 20 mm. long and 12 mm. wide, of very fine gauzy texture made of white silk; the pupa is slender, 13 or 14 mm. long, tapering gradually to the tail, the tip of which terminates in a long spike with square end, set with six long curled spines; the pupa skin is glossy and shining, curiously ornamented with tufts of hair; on the back of each segment, just in the region of the sub-dorsal lines, there is a pair of tubercles, each set with a whorl of eight or ten harsh looking waved and curled hairs; three of the anterior segments bear in addition each a pair of longish transverse ridges behind these tubercles, and closely set with shorter curled bristles, and on the sides of the two segments next the head there is a group of three or four small spine-bearing tubercles; below the spiracles the abdomen is ornamented with tubercles bearing fewer and shorter bristles than those on the back; the general colour is pale chestnut-brown, the wing-cases and some patches on the back of the front segments darker brown; the bristles, which under a lens look like cocoa-nut fibre, are light brown: altogether, this is one of the most singular pupæ I have seen.

Exeter: September 6th, 1884.

DESCRIPTION OF THE LARVA OF *SCOPARIA CRATÆGALIS*.

BY GEO. T. PORRITT, F.L.S.

On the 6th of April last I received from Mr. W. H. B. Fletcher, of Worthing, a supply of *Scoparia* larvæ, with the information that he had collected them from lichens, "off a paling formed of oak-planks like sleepers; many of the larvæ live far in the wood, probably using holes made by larvæ of *Dasycera sulphurella*. They are easy to find, as they make a slight web over the lichen." Two days later, on the

8th, another batch of larvæ reached me from Mr. Fletcher, which he had found in abundance on lichens on hawthorn twigs. The specimens were smaller and evidently younger than those from the oak-post lichens, but on a close examination I felt sure they were of the same species, as they appeared to differ only in the broad, transverse, whitish-grey streaks on each segment (described further on), seeming closer together, forming, indeed, a somewhat heart-shaped mark. Both lots of larvæ proved to be those of *Scoparia cratægalis*. Specimens of the first batch I described on April 7th, as follows:—Length, about half an inch, of moderate bulk when at rest, but appears rather slender when crawling; head and frontal plate highly polished, the former has the lobes rounded, and is narrower than the second segment, into which it can be partially withdrawn; each segment is plump and conspicuously divided from its neighbours by the deeply cut divisions, and these, with the large raised glossy tubercles, give to the skin a somewhat rough appearance.

Ground-colour dark olive-green, throwing into rather striking relief two whitish-grey, or cream-coloured, transverse streaks on each segment, the front streak being broader and larger than that behind it. On these streaks are situate the intensely black tubercles, which, being as broad as the streaks, appear to divide them into sections; and the streaks are further divided by the dark, fine, thread-like, dorsal line: there are no perceptible sub-dorsal lines, but an irregular greyish stripe extends along the spiracular region, and on each segment below this line is a small black spot: head and frontal plate, like the tubercles, of intense glossy black; the small spiracles also black.

Ventral area and pro-legs dingy dark olive-green, and on the outside of each of the latter a black spot; anterior-legs encircled with black.

They grew very slowly, and it was not until the beginning of June that the last were full-grown. They were then nearly three-quarters of an inch long: the dorsal area had the ground-colour of a paler olive-green, but in other respects was the same as when described in April. Ventral surface and pro-legs olive-green; the 5th and 6th segments had each three transverse black spots, and similar spots, but smaller and more irregular, occurred on others of the segments; a black spot on the outer side of each pro-leg; the anterior-legs encircled with black.

NOTE ON A NEW *NEPTICULA* BRED FROM ROSE IN LANCA-
SHIRE BY MR. HODGKINSON.

BY H. T. STAINTON, F.R.S.

Mr. J. B. Hodgkinson has been so fortunate as to breed three specimens of a brilliant *Nepticula* new to science, from larvæ found last autumn mining in the leaves of roses, at Leyland, near Preston, in Lancashire.

Mr. Hodgkinson's first impression was that he had simply detected a new locality for *N. centifoliella*, which Mr. W. C. Boyd has repeatedly met with at Cheshunt; but the very first glance I had of Mr. Hodgkinson's specimens satisfied me (as it did also Mr. Boyd) that it was a very different species from *centifoliella*.

For this new species I would propose the name—

NEPTICULA HODGKINSONI.

It may be described as follows :

Exp. alar., 2½—3 lines. Tuft of the head black. Anterior-wings with the entire basal portion rich golden-brown (with no tinge of purple before the fascia), fascia placed beyond the middle, nearly perpendicular, bright pale golden; beyond the fascia the apical portion is deep purple, with the cilia grey. There are two specimens exactly alike, which both appear to be males. The third specimen is a female, and has the basal portion of the anterior wings paler, more bronzy; the fascia is more of a silvery lustre, and rather obliquely placed.

The mined rose-leaves, of which Mr. Hodgkinson has sent me specimens, are ordinary sized leaves, thus not to be mistaken for the leaves of *Rosa spinosissima*, which, moreover, does not grow at Leyland.

It may, however, not be undesirable to mention that Mr. W. H. B. Fletcher has noticed near Worthing that the leaves of *Rosa spinosissima* growing in very sheltered places "well underneath the nut bushes" were mined last autumn by the larva of a *Nepticula* which closely followed the margins of the leaf, and of which the mine seemed to be too small for either of the common rose-species.

Lewisham: September 19th, 1884.

ON PARTHENOGENESIS IN THE *TENTHREDINIDÆ*.

BY P. CAMERON.

Since the publication, in 1882, of the first volume of my Mongr. Brit. Phyto. Hym., wherein I gave an account of what was known up to that time of the occurrence of Parthenogenesis in saw-flies, I have

been able to prove, experimentally its existence in the following British species :

1. *Nematus appendiculatus*.—Females bred.
2. *Nematus ruficornis*.—Eggs were laid, but the larvæ died very young.
3. *Nematus compressicornis*.—Eggs were laid, but did not develop ; they were, however, certainly fertile.
4. *Nematus cadderensis*.—Males bred.
5. *Nematus conductus*.—Females bred.
6. *Cræsus septentrionalis*.—Males bred.
7. *Cræsus varus*.—One female bred.
8. *Cladius padi*.—Males bred.
9. *Cladius rufipes*.—Eggs laid, but did not yield the larvæ.
10. *Abia nitens*.—Males bred.
11. *Trichiosoma lucorum*.—Males bred.
12. *Hylotoma ustulata*.—Eggs laid, but the larvæ perished in them.
13. *Lophyrus pini*.—Males bred.

Glasgow : September 15th, 1884.

A SYNOPSIS OF THE CENTRAL AMERICAN SPECIES OF *JOPPA*, WITH DIAGNOSES OF NEW SPECIES.

BY P. CAMERON.

The following new species will be more fully described in Messrs. Godman and Salvin's "Biologia Americana-Centrali."

JOPPA MELANOCEPHALA.

Flavo-testacea ; capite, antennis, abdominis apice tarsisque posterioribus nigris ; alis flavo-hyalinis, apice violaceis, stigmatè flavo.

Long. 21—22 mm.

Hab. : Panama, Volcan de Chiriqui, 2500—4000 feet ; Bugaba, 800—1200 feet (*Champion*).

JOPPA VARIPES.

Flavo-testacea, antennis, vertice, abdominis apice, tarsis, femoribus proparte tibiæ et apice nigris ; alis flavo-hyalinis, apice fumatis, stigmatè flavo.

Long. 11—12 mm.

Hab. : Panama, Volcan de Chiriqui, 2500—6000 feet (*Champion*).

JOPPA MELANOSTIGMA.

Flava, antennis, vertice, mesonoto, abdominis apice, geniculis posterioribus læte tarsisque posterioribus nigris ; alis flavo-hyalinis, apice fumatis, stigmatè nigro.

Long. 14 mm.

Hab. : Bugaba (*Champion*).

JOPPA XANTHOSTIGMA.

Flava, antennis, vertice, mesonoto, mesosterno, abdominis apice, tarsis posterioribus tibiis et posticis apice nigris; alis flavis, apice fumatis, stigmate flavo, ♂. Long. 13 mm.

Hab. : Cache, Costa Rica (*Rogers*).

JOPPA MACULICORNIS.

Flava, antennis, capite postice, mesonoto, mesopleuris, metanoti basi, abdominis apice, tarsis posterioribus femoribusque posterioribus, dimidio apicali nigris; antennarum medio annulo albo; alis nigris, medio flavo-hyalinis. Long. 12 mm.

Hab. : Volcan de Chiriqui, 4000—6000 feet, in Panama (*Champion*).

JOPPA NIGRICEPS.

Nigra, metathorace, abdominis segmentis 1—2, coxis, trochanteribus, femoribus tibiisque proparte, flavis; alis violaceis, albo-maculatis.

Long. 18—19 mm.

Hab. : Volcan de Chiriqui, Vera Paz (*Champion*).

JOPPA ROGERSI.

Differs from *J. nigriceps* in the scutellum not being raised into a sharp peak in the centre, it being flat along its entire extent, and traversed by two or three carinæ; in the 3rd abdominal segment being shorter than all the succeeding segments, it being longer than them in *J. nigriceps*, in the metathoracic areas being all clearly defined, and the pronotum not transversely striated.

Hab. : Irazu, 6000—7000 feet, Costa Rica (*H. Rogers*).

JOPPA GENICULATA.

Nigro-violacea, facie, metapleuris, abdominis segmentis 1—2, coxis, trochanteribus, femoribus tibiisque proparte flavis; alis violaceis, albo-fasciatis.

Long. 16—18 mm.

Hab. : Gubilguitz, Vera Paz and Volcan de Chiriqui (*Champion*).

JOPPA XANTHOSTOMA.

Nigra, ore, palpis, metathorace, coxis, trochanteribus, femoribus proparte, tibiis anterioribus proparte posticisque (basi excepto) flavis; alis violaceis, albo-fasciatis.

Long. 20—22 mm.

Hab. : Guatemala and Panama.

Joppa eleganter, Smith, and *J. pulchripennis*, Smith, are referable

to *Trogus*; the former = *Trogus blandita*, Cresson. *Joppa maculosa*, Smith, may be referred to *Ichneumon*.

SYNOPSIS OF THE SPECIES.

- 1 (9) Mesonotum without black.
- 2 (8) Wings hyaline, black at base.
- 3 (4) Head entirely black *MELANOCEPHALA*, Cam.
- 4 (3) Head only black above.
- 5 (6) Hind coxæ entirely yellow, base of 2nd abdominal segment not black, extreme apex of hind tibiae only black *VARIPIES*, Cam.
- 6 (7) Hind coxæ entirely black, metanotum smooth, almost impunctate, abdomen longitudinally striated *VARIOLOSA*, Smith.
- 7 (6) Hind coxæ yellow, with two black spots, abdomen longitudinally aciculate, metathorax longitudinally striated *ELEGANTULA*, Cresson.
- 8 (2) Wings entirely black *FUMIPENNIS*, Cresson.
- 9 (1) Mesonotum marked with black.
- 10 (11) Wings entirely yellow *ALTERNANS*, Brullé.
- 11 (12) Wings yellowish, a small fascia at base of radial cellule, metathorax with two short spines behind, petiole black *SUTURALIS*, Brullé.
- 12 (15) Wings yellowish, the apex smoky.
- 13 (14) Apex of tibiae and stigma black *MELANOSTIGMA*, Cam.
- 14 (13) Apex of tibiae and stigma yellow *XANTHOSTIGMA*, Cam.
- 15 (22) Wings yellowish, the base and apex black.
- 16 (19) Pleuræ entirely yellow.
- 17 (18) Scutellum and base of metathorax black *DECORATA*, Cresson.
- 18 (17) Scutellum and base of metathorax yellow *INCESTA*, Cresson.
- 19 (16) Mesopleuræ black.
- 20 (21) Apex of hind femora black, apex of tibiae yellow *MACULICOENIS*, Cam.
- 21 (20) Apex of hind femora yellow, tibiae broadly black *HILARIS*, Smith.
- 22 (27) Wings violaceous, the middle more or less hyaline.
- 23 (26) Pro-, meso-thorax, and head black, femora broadly black.
- 24 (25) Scutellum flat in centre, 3rd abdominal segment shorter than all the succeeding together *ROGERSI*, Cam.
- 25 (24) Scutellum sharply peaked, 3rd abdominal segment longer than all the succeeding together *NIGRICEPS*, Cam.
- 26 (23) Pronotum and pleuræ yellow, hind knees only black *MODESTA*, Smith.
- 27 (22) Wings hyaline, apex and one or two fasciæ in the centre black.
- 28 (33) Mesonotum entirely black.
- 29 (30) Pleuræ entirely yellow, hind knees only black *CHIRIQUENSIS*, Cam.
- 30 (29) Pleuræ entirely black, femora broadly black.
- 31 (32) Metanotum black, a small fascia in middle of hind-wings...
..... *GENICULATA*, Cam.
- 32 (31) Metanotum yellow, no fascia in hind-wings *XANTHOSTOMA*, Cam.
- 33 (28) Mesonotum yellow, with three black longitudinal lines, metanotum spotted with black *SUMICHRISTI*, Cresson.

ON THE PROBABLE EXTINCTION OF *LYCÆNA ARION* IN BRITAIN.

BY HERBERT GOSS, F.L.S.

During the last five and twenty years, *Lycæna Arion* has been gradually disappearing from its known localities in this country. This species was certainly extinct in Barnwell Wold, Northamptonshire, when I first visited that locality in June, 1865; and I was informed by the late Rev. W. Whall, then resident at Thurning, in that neighbourhood, that it had rarely, if ever, been seen in the Wold since the wet summer of 1860.

I have not seen *L. Arion* in Gloucestershire since June, 1877, nor have I heard of its occurrence in that county since 1878; and now we learn, from Mr. Bignell's note in the last number of this Magazine, of the disappearance of this species from its head-quarters on the south coast of Devon. It seems highly probable, therefore, that in the course of a few years, "the large blue," like "the large copper," will be numbered amongst the extinct butterflies of the United Kingdom.

In the last week of June, 1876, I spent a few days in Gloucestershire, and on the 26th of that month I first had the pleasure of seeing *L. Arion* on the wing. The scene of this event was an old disused quarry in the Cotswolds, not many miles from Stroud, and at an elevation of over 700 feet. Although there was a considerable extent of wild land in the locality to which I am referring, on the same geological formation, and with an identical flora, *L. Arion* appeared to be confined to a space of about an acre or less; but within this limited area it was not uncommon, and in the course of an hour I netted upwards of a dozen specimens. On the hill-sides in this locality wild thyme was most abundant; and in addition to *Lotus corniculatus*, *Hippocrepis comosa*, and other common *Leguminosæ*, there were occasional patches of the local *Astragalus hypoglottis*, together with the sweet-scented little musk orchis, *Herminium monorchis*.

After spending an hour or so on the hill-sides, and in the old quarries, I entered a beech-wood at no great distance, and having traversed it for more than two miles I arrived in some open sunny glades, where there was an abundance of flowers, especially wild thyme. Here *L. Arion* was far more plentiful than on the open hills or in the quarries, and was, moreover, not confined to such a limited area, specimens being met with over an extent of ground more than a mile in length.

In the open glades of this old beech-wood as many as three or

four specimens of *L. Arion* were sometimes to be seen at the same time, flying gently about, or settling on the thyme, and they were accompanied by numbers of *Lycæna Alexis*, and by a good many *L. Adonis* and *L. Agestis*. I boxed several female *L. Arion*, in the hopes of getting ova, but did not obtain any. Amongst the other insects noticed in this wood were *Chelonia plantaginis*, *Platypteryx unguicula*, *Ephyra trilinearia*, *Melanippe montanata*, and *Acidalia ornata*.

In the end of June, 1877, I again visited Gloucestershire, and stayed from the 25th to the 29th of the month, in a farm house about two miles distant from the localities in which *Arion* had occurred in the preceding year. I was delighted to find that the species occurred in both localities more plentifully than in 1876, and was even more widely distributed in the open spaces in the beech-woods extending for a distance of nearly two miles.

On the 29th June, 1877, the day on which I left the district, *L. Arion* was commoner than on any previous occasion, and although many specimens were worn, others, both ♂ and ♀, were just emerging from the chrysalis, so that in this species there appears to be a succession of specimens during June and the early part of July.

In June, 1878, I heard from Mr. Marsden, of Gloucester, that *L. Arion* was very rare that year; and from that time to the present he has been unable to report to me the capture of a single specimen.

Last year, after an interval of six years, I was again staying in the neighbourhood of Stroud, from the 18th to the 26th June, and visited the old localities on every day when the weather was fine and calm; but neither on the hills, in the old quarries, nor in the beech-woods, did I see a single specimen of *L. Arion*. Not only were there no *L. Arion*, but *L. Adonis* and *Agestis* were both conspicuous by their absence; and with the exception of a few *Chortobius Pamphilus* and a casual *Lycæna Alexis*, insect-life seemed almost extinct. I could scarcely realize that I was in the same locality as that which I had left in June, 1877, so full of life!

There seems to be no satisfactory explanation for this sudden disappearance of *L. Arion* from these localities in the Cotswolds. It has been suggested by some persons acquainted with the district, that the apparent extinction of the species may be attributed to the practice of burning the grass on the hill-sides for the purpose of improving the pasture. Had the herbage on these hills been burnt for the first time in 1878, it might, with some reason, have been considered the probable cause of the extinction of *L. Arion*; but as the practice of burning the grass is not a new one, but has, as I have been

informed on local authority, existed from time immemorial, it cannot be accepted as a satisfactory explanation for the sudden disappearance of this butterfly. But even assuming that the disappearance of *L. Arion* might be due to this cause on the hills, commons, and sheep-walks, both in the Cotswolds and in Devonshire, that would not account for the extinction of the species in the open spaces in the beech-woods, where, of course, from the nature of the surroundings, the burning of the grass has never been practised. Other persons have suggested that the extinction of *L. Arion* is due to the rapacity of collectors. This, I believe, may probably be the case where the species is confined to such a limited area as in the locality which I first described; but it seems incredible that an insect which was as common in 1877 as I have reported it, and which was distributed over an extent of ground nearly two miles in length, could have been suddenly exterminated.

It seems more probable that the sudden and total disappearance of *L. Arion* from the locality in which I found it so plentiful in 1877, may have been due to an unprecedented succession of mild winters, ungenial springs, wet and cold Junes, and other unfavourable meteorological conditions, rather than to the burning of the grass—which, at least in one locality, had never been practicable—or the rapacity of collectors which could scarcely have been equal to the task of the extermination of nearly all the “common blues” and other species, which, together with *Arion*, had been plentiful in the same localities in 1877.

Surbiton, Surrey:

September 8th, 1884.

Note on second brood of Argynnis Euphrosyne and Selene.—As I have met with the second brood of *A. Selene* so early as August 13th of this year, I am now inclined to think that the specimen of *A. Euphrosyne* taken on August 1st (cf. Ent. Mo. Mag., xxi, 88) may have been one of the second brood. Can any of your readers give us information with respect to the second brood of the latter species?

The *Luzula* on which I found *A. Selene* congregating was *L. campestris* var. *congesta*, Sm.; how it came to be printed *L. glomerata* I cannot imagine.*—E. N. BLOOMFIELD, Guestling: September 1st, 1884.

Deilephila lineata at Dover.—A fine specimen of this insect was picked up near here by a working man yesterday morning; it was given by him to Mr. Davis of this town, in whose cabinet it will find a resting place. It was shown to me alive, and may be worth a record in your Magazine.—SYDNEY WEBB, Maidstone House, Dover: September 19th, 1884.

* Through an unfortunate editorial lapsus.—Eds.

A notice of Coleophora paripennella at Kennington in 1851.—Just a third of a century ago, my friend, Mr. William Thomson, who was then living at Brixton, brought me some cases, which he had found on an old wooden fence at Kennington, and he assured me there were more where these came from.

The cases he brought were different from any with which I was then acquainted, though I certainly apprehended they must belong to some species of the genus *Coleophora*—their position on the fence was described to me as different from the ordinary pose of the *Coleophora* cases, with which we were then acquainted.

I resolved, therefore, to visit the fence myself, and see the cases *in situ*; and having been furnished with a plan of the locality, I had no difficulty in finding the identical palings—open palings, about four or five feet high. I found the cases plentiful enough, lying well-nigh flat to the surface of the paling, some on the outer side, but more on the sides of the openings of the palings. I had been at work about half-an-hour, when I found that Mr. James Francis Stephens (then living in the Foxley Road, Kennington) had come on the same errand as myself, and was busily picking these cases off the fence. I believe at the time we had neither of us the slightest notion what species these cases would produce.

I am sorry that I have no record of the date of this visit to the palings at Kennington, but it was in 1851, and I think probably in the month of March.

On the 31st May the perfect insects began to emerge—they were *Coleophora paripennella*, at that time a great rarity, and in very few collections. Only six came out on the 31st of May, but early in June they came out more freely, and for several days I bred some twenty or thirty a day; the last came out on the 20th of June, and I then found that I had set out 224 specimens of this hitherto rare insect.

How many cases I collected on that visit to the palings at Kennington I cannot say, but as I no doubt distributed many cases amongst my friends, it seems probable that my total haul of cases would be little short of 500; Mr. Stephens I know collected a goodly number, and it is probable that other entomologists had also been put upon the scent by Mr. Thomson, and had taken their fill.

Behind the fence grew a somewhat stunted hedge, on which my notes are somewhat at variance, it was, however, either hawthorn or sloe. When the larvæ had been feeding the previous autumn that hedge must have been a curious sight.

I believe some years elapsed before we became familiar with the feeding larvæ of *C. paripennella*, the large lateral appendages to the case of the feeding larvæ giving it a very different appearance to the case of the hibernated larvæ.

I was told the other day that the larvæ of *C. paripennella* was solitary, yet I think had my informant seen that hedge at Kennington in the autumn of 1850, he would scarcely have applied that epithet to the scores of larvæ he would have seen there.—H. T. STAINTON, Mountsfield, Lewisham, S.E.: September 6th, 1884.

Note on Acipitilia microdactylus.—It has been stated that the larvæ of *A. microdactylus* feeds in or on the flowers of *Eupatorium cannabinum*; I feel quite certain that it feeds in the stem immediately below. In many cases the plants attacked can be at once distinguished, from the dwarfing of the central head of blossoms, caused by the attack of the larvæ on the terminal portion of the stem having been made when it was tender, so that the side bunches of flowers overreach it. In ordinary circumstances the head of blossoms is all on the same plane. When

the stem is attacked lower down, where it is harder, the blossom is not affected. If the larva fed on the flowers and afterwards entered the stem, I doubt very much whether there would be any swelling in the stem, as the plant has ceased to grow when in full bloom. Yesterday I found a larva in a stem that was not in flower, and I doubt very much its having come from another plant. In some plants I have been able to see a small hole above the joint, where I should think the larva first entered; and the reason why the hole below is so much larger is evidently to enable the larva to turn out its frass.—G. C. BIGNELL, 9, Clarence Place, Stonehouse, Plymouth: *August 27th*, 1884.

[The history of this species was detailed by the late Mr. Buckler, in vol. xii of this Magazine, pp. 234—236. He found the larvæ in the stems, even in a very young stage, but his account was not drawn up absolutely *ab ovo*; so far as it goes it agrees altogether with Mr. Bignell's observations.—EDS.]

Ennomos alniaria (autumnaria) at Deal.—Last evening, about 10 p.m., when returning from sugaring on the sandhills with Mr. Powell, I had the good fortune to capture two lovely *E. alniaria* at light. I have since taken another at rest. The three specimens are females, and I have already obtained ova.—C. FENN, Glynde House, Deal: *September 18th*, 1884.

Laverna Langiella at Cheshunt.—About five years ago I noticed in my garden some empty mines in the leaves of *Circea lutetiana*, which I supposed had belonged to *Asychna terminella*; but until this year could not find one still tenanted. Last May, however, I succeeded in getting a few larvæ, from which, somewhat to my surprise, I bred a couple of *Laverna Langiella*. Both specimens have a good many white scales scattered round the anterior-wings.—W. C. BOYD, Cheshunt: *September 13th*, 1884.

Nonagria fulva on rushes.—I find that by examining the rush-stems at night with a lantern I can obtain as many *N. fulva* as I like, for they seem to be very common this year. One evening, when waiting to visit my sugar, I thought I would light the lantern and look round the rushes in the marsh. I found four that time perched about half way up the rushes. If touched, they immediately fell, pretending to be lifeless, but I have noticed them to propel themselves downwards through the grass by an almost imperceptible motion. I worked them up in my spare time on other evenings since. Two or three out of a dozen appear to be females.—CHAS. G. BARRETT, Jun., Pembroke: *August 21st*, 1884.

Great abundance of Tipulæ and Vanessa cardui.—I suppose you are deluged with notes recording the excessive abundance of *Tipulæ* and *V. cardui*. The starlings, here, stuff themselves with the former all day long; and the latter throng together in warm sheltered nooks, sunning themselves on *Inula dysenterica*.—A. E. EATON, Osmington, Weymouth: *September 20th*, 1884.

[The above may be taken as indicating facts that must be patent to all entomologists, at any rate in the south of England: but what is the condition with regard to *Colias Edusa* and *Hyale*?—EDS.]

Hydrobius æneus: change of name.—Until recently, two species had been mixed in European collections of *Hydrophilidæ* under the name of *Hydrobius æneus*, Germ. One of these occurs in our country, and is recorded at present in our Catalogues as *Paracymus æneus*. Sahlberg has lately pointed out the confusion, and has proposed the trivial name of *nigro-æneus* for our species, which will, therefore, now stand as *Paracymus nigro-æneus*, Sahl. The true *H. æneus*, Germ., is a rather smaller and narrower insect, with paler legs and palpi; it is common in brackish waters in Southern Europe, occurring also in the Paris district, so that it may possibly be found in this country. Although the two species are superficially very similar, the structure of the antennæ is different; I am, indeed, strongly inclined to the opinion that the two will have to be generically separated, for while there are nine joints in the antennæ of *Paracymus nigro-æneus*, Sahl., I can only find eight in those of *H. æneus*, Germ. The specimen of this latter that I have mounted in balsam, in order to ascertain the fact, has not, however, made a very successful preparation, so that I do not feel quite satisfied on the point.—D. SHARP, Southampton: August 30th, 1884.

Blaps mortisaga at Hitchin.—On July 22nd, a friend brought me two beetles alive which he had caught in a trap in his cellar, and which he thought were different to the ordinary cellar-beetle (*B. mucronata*). On examination they proved to be *Blaps mortisaga*. I have now taken all the British *Blaptidæ* in this neighbourhood, viz., *B. mortisaga*, Hitchin, two specimens; *B. mucronata*, Hitchin, abundant; *B. similis*, Pirton, rather common.—JOHN HARTLEY-DURRANT, Bancroft House, Hitchin, Herts.: September 13th, 1884.

Amara fusca, Dj., at Doncaster.—Among a number of beetles recently collected for me from beneath stones at Doncaster by a non-entomological relation, and which I found awaiting my arrival there in a pickle-bottle with a piece of wet rag as "cover," I was pleased to find a single specimen (a male) of this scarce species, which had survived several days' imprisonment in the said bottle, while having for companions principally *Pterostichus vulgaris* and *Harpalus ruficornis*.—JOHN W. ELLIS, 101, Everton Road, Liverpool: August 31st, 1884.

The British species of Laccobius.—Upon reading Dr. Sharp's remarks on these insects in the September issue of this Magazine (cf. Ent. Mo. Mag., xxi, 85), I examined my own specimens very carefully, and find I have examples of all the four species he describes. *L. sinuatus*, Motsch. (= *L. nigriceps*, Th.), of course carried away the palm in point of numbers, but was approached very closely by *L. alutaceus*, Th., of which I took several specimens near Bognor in April of the present year. I do not seem to have this species from any other locality; it is probably very local. Of *L. minutus*, Sharp, I could only find one example, without note as to locality, &c., but probably also from Bognor. *L. bipunctatus*, Th., I took plentifully from ditches on Selsea Bill in April, and also, more sparingly, near Aylsham, Norfolk, in June; considering it to be only a varying form of the common species, however, I unfortunately neglected to mount more than two or three examples. My solitary specimen of *L. minutus* has distinct traces of the white spot on the apex of the elytra, which is so conspicuous in *L. bipunctatus*; has Dr. Sharp noticed this in his series? The punctuation of the thorax, however, is essentially

different, and the distinctions between all the four species, indeed, are so well marked as to render it somewhat surprising they should so long have been overlooked.—THEODORE WOOD, 5, Selwyn Terrace, Upper Norwood, S.E.: *September 2nd, 1884.*

Additions to the Hemiptera of the Hastings district.—During a short stay at Hastings at the beginning of August, I was fortunate enough to add the following three species of *Hemiptera-Heteroptera* to the list of 242 species already recorded from that neighbourhood.

Henestaris laticeps.—A tolerably numerous colony at Bulverhythe, at the roots of various plants and amongst *débris*; the species was extremely local, being confined to a few square yards of ground at the base of a low cliff; it was only just arriving at maturity, and many were in the larval condition, in which they are of a pale ochreous colour.

Teratocoris antennatus.—A single specimen on the sand hills at Camber, at the roots of *Psamma arenaria*. This insect has apparently been recorded hitherto only from Wicken Fen and Reigate. Much searching failed to discover a second specimen of the imago, though I saw what I imagine to be the larval form.

Sigara Scholtzii.—Plentiful in a pond near Guestling Church; I could have taken any number; they were to be had only by scraping the net round the roots of patches of rushes growing on the margins of the pond.—E. A. BUTLER, 7, Turle Road, Tollington Park, N.

Lyge reducta, Hagen; an addition to the British Trichoptera.—On August 27th, I and Mr. J. J. King made an excursion to Weybridge. The weather was cold and damp, and the sudden change seemed to have rendered insects torpid, for very few were to be seen. When sweeping the banks of the Thames opposite Weybridge, I captured a single *Lyge*, ♂, which, in the form of the "dorsal plate," and of the apices of the inferior appendages (as detailed in the "Revision and Synopsis," p. 424, pl. xlv), agrees with *L. reducta*. A second visit to the locality (this time in company with Mr. K. J. Morton), on the 11th inst.—a glorious day—resulted in the finding of several *L. phæopa*, Steph., but in nothing that can be considered *L. reducta*. The distinctive characters between the two are undoubtedly slight; moreover the form of the "dorsal plate" in *L. phæopa* is decidedly variable; yet I have seen nothing purely intermediate. If it should prove that the two are really not distinct, then *L. sinuata*, McLach., of which I have seen only two individuals (one from Austria, the other from Finland), will also have to be united with *L. phæopa*, from which it is less distinct than is the form known as *L. reducta*.

On each of these excursions, a few examples of *Ithytrichia lamellaris*, Eaton, were captured; this Hydroptilid has, I think, only been recorded as British from the original localities, viz.: Ashbourne and Romsey.—R. MCLACHLAN, Lewisham: *September 15th, 1884.*

Cæcilius atricornis, McLach., near Chertsey.—On the 11th inst., when sweeping the short herbage on the banks of the Thames above Chertsey Bridge, close to the

water's edge, I found an example of this rare species of *Procidæ* in my net. *C. atricornis* was described in this Magazine, vol. v, p. 196 (January, 1869), from several examples (two of which are before me) found by the late Mr. J. C. Dale, at Freshwater, Isle of Wight, amongst rubbish in a dry ditch, on November 5th, with hoar-frost on the ground. Until now, it had not been re-discovered in Britain, and was only otherwise known from a specimen taken in Holland, in Albarda's collection. Perhaps it is a truly autumnal species. My Chertsey specimen is slightly immature, and the head is greyish, rather than reddish-yellow, with the black suffusion (very conspicuous on the fore-part of the disc in the original examples) only slightly indicated. It appears to me that the words "articulo tertio ad apicem testaceo" (relating to the antennæ) in the original description involve an error, and that "ad basin" should be substituted. Indeed, Kolbe, who probably drew up his diagnosis (*Entom. Nachrichten*, viii, p. 211) from the Dutch example, says, "drittes Glied an der Basis gelbbraun;" he says also, "Kopf oben schwarz," which does not agree with the original examples, which have the head decidedly yellow in the middle of the disc; but the black suffusion may possibly sometimes occupy the whole of the disc.

On the same day I found two examples of *Stenopsocus stigmaticus*, Imhoff, between Weybridge and Chertsey, an addition to the few recorded British localities for this species.—*Id.*

ENTOMOLOGICAL SOCIETY OF LONDON.—August 6th, 1884: J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

Mr. Pascoe exhibited *Lecanium (Pulvinaria) vitis*, found by him on a vine at St. Heliers, Jersey.

Mr. Durrant exhibited *Blaps mortisaga* from near Hitchin, together with *B. mucronatus* and *similis* from the same locality.

Mr. Distant, in alluding to *Cilix spinula*, called attention to the extraordinary resemblance this insect bore when at rest to an Homopteron of the genus *Flata*. Mr. Fitch alluded to the resemblance borne by the same insect to the excrement of birds. Mr. A. G. Butler spoke concerning the resemblance borne by certain New Holland *Lepidoptera (Homopsyche)* to *Homoptera*.

Mr. Pascoe exhibited a pretty Chalcid belonging to the *Cleonymidæ* from Jersey, and remarked on its resemblance to certain *Hemiptera*.

Mr. Billups exhibited the following *Tenthredinidæ* new to Britain, viz., *Camponiscus apicalis*, Brischke, from Weybridge, and *Blennocampa alternipes*, Klug, from Loughton: also a *Chelogyne* which he had found in the burrows of *Halictus morio* at Chertsey.

Miss E. A. Ormerod, in exhibiting a piece of hide perforated by the larvæ of *Æstrus* (or "worbles" as they are termed), called attention to the practical importance of the subject, and the desirability of preventing the deposition of the eggs, or their destruction before hatching. Mr. Distant concurred, and alluded to the loss occasioned by perforated hides. Mr. Fitch said the amount of damage occasioned was irregular and uncertain. Young short-horns seemed the most liable to attack; whereas, mature Welsh and Scotch beasts scarcely suffered at all. Prof.

Riley said that in Illinois it was the practice to rub the backs of the cattle with mercurial ointment or kerosene oil in the late autumn, and this means was usually successful.

Mr. Wailly exhibited hybrids between *Attacus Roylei* and *A. Pernyi*, and between *Samia Cecropia* and *S. ceanothi*, but he could not persuade the sexes of *S. ceanothi* to pair. Likewise *Crecula trifenestrata* from Madras, bred for the first time in Europe; the silk appeared to be of little commercial value. Furthermore, he exhibited a long series of *Attacus Atlas*, showing its variation in colour and size according to locality.

The Secretary exhibited a photograph of *Chrysopa perla* sent by Mr. Bignell, and remarked on the apparent use of photography in illustrating neuration. He also exhibited, on behalf of Mr. McLachlan, specimens of *Cecidomyiidae* bred from the galls on the roots of *Cattleya* exhibited at the June meeting, and which were supposed to be wholly owing to the attacks of *Isosoma orchidearum*. Prof. Riley was of opinion that the flies would prove to be inquilines, and not the true makers of the galls.

Mr. Roland Trimen sent notes on the habits of *Platychile pallida*, F., as observed on the sandy sea-beach near Cape Town. During the day they bury themselves in the sand, and are apparently only nocturnally active.

Dr. Fritz Müller communicated a series of interesting notes on the habits of South American Butterflies, and sent some South American fig-insects.

Mr. A. G. Butler communicated a paper by Surgeon-Major Forsyth on the life histories of sixty species of *Lepidoptera* from Central India, and exhibited drawings in connection therewith.

Entomological collecting on a voyage in the Pacific (concluded from vol. xx, p. 225).—The "Kingfisher" remained at Callao until the 31st December, when she left, with the greater part of the Pacific fleet, for a cruise to the southward. On January 16th, 1884, we put into the roadstead of Arica, where we remained for nearly a week, leaving again on the 22nd. During this time I worked the strip of damp grassy land, which extends along the shore for some distance to the northward of the town, pretty assiduously for insects, but without much success. Nearly all the *Lepidoptera* that I met with were of common Callao-forms, the only exception at all noteworthy being a specimen of the fine *Deilephila Annei*, Guér., of which I previously possessed a pair from Coquimbo. I found also one or two larvæ of a large *Macrosila*, which were unfortunately ichneumonized. Butterflies were represented by about eight species, viz.: *Pyrameis Carye*, two "blues," a *Thecla*, two *Pamphilæ*, a *Pyrgus*, and a *Thymele*, all common at Callao. A good many ordinary *Pyrales* and small *Geometers* were obtained by beating some cotton bushes near the sea, and a pretty and conspicuous *Tinea*—not unlike *Adela De Geerella* in size and marking, but more purplish in tint, and with short, densely ciliated, antennæ—was plentiful, flying in the sunshine round the tops of the fig-trees; and a small dark *Eulepia*, found rarely at Callao, here abounded in wet places. Beetles were poorly represented by a dwarf ♀ of the common Callao *Goloja*, and by a species of *Phaleria*, very like ours, found commonly under refuse on the beach. The hammer-headed shark,

Zygæna malleus, was quite common in the roadstead, the dorsal fins of four or five individuals being often in sight at once, and a small, but fine, specimen of this most extraordinary fish was caught by one of our officers.

Proceeding southwards, the fleet arrived at Iquique on January 23rd, and left again on the 26th. Here, although the whole country is as completely destitute of vegetation as can well be imagined (save for a few *Cacti*), I noticed *Pyrameis Carye*, a *Pyrgus*, and a small *Agrotis*, in the course of a walk along the beach.

The fleet reached Valparaiso on February 6th, having called in at Coquimbo for a day or two, *en route*. During our stay here of about a fortnight, I found plenty to do in the way of collecting, both in the neighbourhood of Valparaiso, and at El Salto; the weather being beautifully fine, although the best part of the season for insects was over. Among the butterflies the fritillary *Euptoieta Hortensia*, Blanchard, was by no means rare, especially at El Salto, and was a welcome addition to my collection. Its larva occurred in plenty on a wiry, viscid plant with blue flowers like those of a *Campanula*, growing on the railway-banks, but they were all small, and I failed to rear any to the perfect state. The two pretty *Satyridæ*, *Neomanas Servilia*, Wallgr., and *N. canonymphina*, Butler, were not scarce on the hills behind Valparaiso, among the arborescent grass, but were usually much worn, especially the former. A good many moths, new to me, chiefly *Geometræ*, were obtained by beating, and a specimen of the fine grey sphinx, *Protoparce Eurylochus*, Phil., was a very welcome addition. Larvæ were generally scarce, though I again found those of *Deilephila spinifascia* in small numbers on the "Quilo."

The "Kingfisher" left Valparaiso on February 23rd for a short trip to Talcahuano, where we arrived on the evening of the 25th. Here the aspect of the country gives evidence of a much moister climate than that of Valparaiso and that farther north; the hill-sides being clothed with fine and luxuriant forest, chiefly consisting of evergreen trees and shrubs: while in the direction of the large town of Concepcion (12 miles distant) and round the head of the Bay of Talcahuano, the land is generally flat, sandy, and marshy, with a copious growth of thistles, coarse grass, wild mint, reeds, &c. The common bramble forms a great part of the hedges, which were loaded with splendid blackberries, here neglected even by the boys: and in the woods, the beautiful and well-known climbing plant, *Lapageria rosea* (known in Chilé as "Copigue") is a frequent and conspicuous object, with its lovely crimson flowers. The whole surrounding country is very pretty and productive, wheat being the chief crop; and, as during our stay of nine days the weather was all that could be desired, I had no reason to complain of any want of success in collecting.

I met with some twenty species of butterflies in all, the greater number occurring in damp fields at the foot of the hills behind Talcahuano, and on the banks of the railway to Concepcion. Of these, the most abundant was *Colias Vautieri*, Guér., which literally swarmed, but was in such exquisitely fresh condition that, common as it is throughout Chilé, I could not resist taking a long series. Next in point of numbers came a beautiful little skipper of the genus *Carterocephalus* (I think, *C. flavomaculatus*, Blanch.) which I had never seen before, but which was so plentiful in certain spots among long grass, that I sometimes had four or five in the net at once. A small dusky-brown *Pamphila* (? *P. fusca*, Reed) was not rare on the

railway-bank with the commoner *P. fulva* and *fasciolata*, but was not easy to obtain in good order. *Pieris Blanchardii*, although not common, was finer and larger than those from Coquimbo, &c., and I saw a stray *Callidryas Drya*, probably at its southern limit of distribution. *Pyrameis Terpsichore* (scarce, but in most lovely condition) and *Carye* were also represented, with *Euptoieta Hortensia*; and two worn specimens of *Elina Flora*, Philippi, a pretty *Satyrid*, new to me, turned up in the marshes. On the hill-sides but few butterflies were to be obtained, except *Epinephele limonias*, Phil. (common, but worn), *Coctei*, Guér. (abundant), and *Pales*?, Phil. *Hipparchia chiliensis*, Guér., a fine species, common at Coquimbo, was represented by two ♀ specimens, and *Argynnis Cytheris* was fairly plentiful, the specimens being very large and fine.

Among the *Heterocera*, the greatest prize was the splendid Emperor-moth, *Polythysana Andromeda*, Philippi, which was sufficiently common for me to see as many as twenty or thirty specimens during its brief period of flight from 10.50 a.m. to about 2 p.m.: but it careers over the tops of the trees in so wild and erratic a manner, that it cost me many a hard run, and much "waste of tissue," to obtain only four males in fairly good order. I was not able to meet with the ♀, or the insect in any of its earlier stages. One specimen of the smaller, but very handsome, *Hyperchirius erythrops*, Blanch., was brought to me, and the curious little bluish-black *Procris melas*, Guér., was obtained in plenty, both by beating in the earlier part of the day, and flying briskly over the tops of the bushes after 3 p.m. Two *Hepialidæ* (the plain brown *Dalaca pallens*, Blanch., and another) were picked up singly, and a very pretty *Eulepia*, somewhat like *E. grammica*, but larger, and with entirely black hind-wings (figured in the Atlas to Gay's "Fauna Chilena" as *Chelonia vittigera*, Blanch.), occurred not rarely in slightly salt marshes. Large companies of the handsome larva of *Macromphalia chilensis*, Felder, reminding me of those of our *Clisiocampa castrensis*, were found feeding on several plants and shrubs, but they were exceedingly difficult to rear in confinement.

Noctua were represented, among others, by the widely distributed *Leucania unipuncta* and *Heliothis armiger* (the latter appears to be a very common Chilean insect), and by several species of *Agrotis* (*saucia*, *fennica*?, and a very fine species not unlike our *A. calligera*, occasionally beaten out of thatch). *Plusia* *nu*, Guenée, *biloba*, Walker (one worn example), and the pretty yellow under-wing *P. virgula*, Blanch., were taken flying by day; but the finest thing of the group was a very handsome insect not unlike a *Catocala* in aspect, expanding 2½ inches, of a general mottled iron-grey colour, with bright orange hind-wings, banded with black. I bred this from a hard oval *Cerura*-like cocoon found attached to a small bough, and obtained another specimen by beating, which method yielded at least 40 species of *Geometra*, more than half of which were new to my collection. Among these were several large and handsome *Ennomidæ*, a fine *Boarmia*?, near *rhomboidaria* in aspect, but tinted with fulvous on the hind-wings (not rare), and, perhaps, the prettiest of all, the delicate sulphur-yellow *Caberid*, *Syllexis lucida*, Butler. *Pyrales*, *Tortrices*, and *Tinea* were not numerous, but a few fine species of the two latter groups turned up, among others a pair of the beautiful blood-red *Pachyphænia sanguinea*, Butler (Trans. Ent. Soc., 1883, p. 81).

Coleoptera were not as a rule plentiful, but I obtained a large dung-beetle,

Megathopa villosa, Esch., the brilliant blue and coppery *Carabus*, *Ceroglossus chilensis*, and (through the kindness of a non-entomological resident of Talcahuano) a fair pair of the enormous brown *Prionid*, *Amallopodes scabrosus*, Lequien, a fine *Bolbocerus*, and a specimen of the large and curious *Molorchid* Longicorn, *Callisphyris macropus*, Newm. A few *Heteromera* and small *Carabidae*, &c., mostly of species not previously met with by me, occurred under stones, and a fine black and white *Otiorynchid* weevil was plentiful, crawling on dry bramble stems.

We left Talcahuano on the evening of March 5th, and next morning anchored off the little town of Lota, famous for its coal-mines, the most productive in Chilé. The roadstead is protected to the northward by a well-wooded promontory, which is partly occupied by the beautiful park and gardens belonging to a wealthy Chilean lady, Madame Cousiño. I spent two or three hours in these gardens, and, the morning being very fine, common butterflies were attracted in swarms by the profusion of geraniums and other flowers. Among these I had the pleasure of taking a small series of *Eroessa chilensis*, Guér., one of the most beautiful insects that Chilé produces. It somewhat resembles our *Anthocharis cardamines*, but is much larger, with the apical half of the fore-wings deep black, enclosing a large oval transverse spot of bright orange. Nearly all the specimens that I took were ♂, in splendid order; they appeared partial to the flowers of a species of *Lantana*, and, their flight being comparatively slow and feeble, they were easy enough to catch. I saw a good many ♂ of *Polythysana Andromeda* in the gardens, but failed to take any. We left the same evening, and after a brief stay at Valparaiso, arrived at Coquimbo on the 12th, at which post we remained until May 14th, when we finally left under orders for home.

Insects had become decidedly scarce at Coquimbo by the middle of March, and decreased in numbers every day. I managed, however, to find enough larvæ of *Callidryas Drya* on the low *Cassia* bushes to produce a very fine series, and to obtain a few *Bombyces* and *Noctua* new to me: notably, a pretty little *Heliophobus*, which occurred sparingly under stones on a sandy plain, in company with several species of *Agrotis*, including our familiar *A. suffusa* and *saucia*. *Eulepia*? *vittigera* was plentiful at the end of March, but was only to be obtained in any numbers by wading knee-deep in a marsh, swarming with most ferocious mosquitoes, and smelling anything but agreeable when the mud was stirred up. The larvæ and pupæ of this moth were to be found here, the former feeding on a species of rush; I also took the handsome Emperor-moth, *Hyperchiria Acharon*, Butler, at rest in the marsh. As before, the pupæ of *Papilio Archidamas* could be obtained in almost any number, attached to rocks and *Cactus*-stems, those of *Alamis polioides* being almost equally common under stones.

We stayed at Valparaiso from May 15th to 18th, when, however, I did not collect any insects myself: though I was enabled, through the kindness of some entomological friends, to add to my collection several conspicuous Chilean butterflies and *Bombyces* which I had not been able to meet with. On the 22nd, we reached Corrál, the port of Valdivia—a most promising looking spot—but as we remained here only until the morning of the 24th, and it rained heavily nearly all the time, I took nothing except a small *Hepialus*.

Resuming our southerly course, we reached Port Otway, a fine harbour in the peninsula of Tres Montes, on the evening of May 27th, and lay there the night. I

landed for an hour in the twilight, but was unable to penetrate into the dense and saturated forest which surrounds the harbour, or to do anything except to pick up a few shells on the beach. Next day (28th), we crossed the stormy Gulf of Peñas, and entered the Messier Channel, where we were at once in smooth water, the weather being fine for these regions, and the scenery on either hand most magnificent. We anchored for the night in Island Harbour, a singularly beautiful land-locked basin, barely large enough to allow the ship to swing. As there was an hour's daylight left, I landed and had a pleasant scramble among the dense woods, but obtained only a large cricket, and a pretty green *Pentatomid* bug, under bark. Gray Harbour was reached at 1.45 p.m. on the 29th, and I spent the rest of the afternoon on shore. The beauty of this very picturesque harbour is sadly marred by the fact that all the trees on the south side of the harbour for several miles have been destroyed by fire (I think on the occasion of the visit of the "Challenger," in January, 1876), and nothing remains but a melancholy array of bleached, bare stumps, with a few green bushes springing up between them. Such a quantity of dead timber gave promise of at least a fair number of beetles, but two or three hours of tolerably hard work, produced only a small *Atomaria*, a *Lampyris* larva, and two specimens of a fine, flat, wiry-legged, pitchy-black beetle, I think related to *Cucujus*, &c. A bug of the genus *Xylocoris* was abundant under loose bark, but was usually immature. Passing through the "English Narrows," a lovely piece of scenery, but decidedly ticklish as regards navigation, at noon the next day (30th), we reached Port Grappler in the evening, in time for a run ashore before dark. Here I got nothing beyond a few ferns (which were still in great profusion and beauty, although the winter was far advanced), but one of my messmates brought me a prize in the shape of a fine *Geometer*, 1½ inches in expanse, with the usual lines handsomely marked in whitish on a rich sepia-brown ground: unfortunately, it was a little damaged in capture. After dark, we were visited by a canoe containing 10 Fuegians of all ages and both sexes, who remained alongside the ship for several hours. It is difficult to imagine a more striking picture of savagery than they presented, as they sat huddled round a small fire in the bottom of the canoe, nearly all of them being entirely naked, although the thermometer was down to 40°, with sleet and rain. Not one of them was as much as five feet in height, their skins being of a rather light tawny-brown colour, and with shocks of coarse, ragged black hair falling over their flat, broad, beardless faces. They knew the English and Spanish names for a few commoner objects, and clamoured loudly for "tābācā" and "galleta" (ship's biscuit), with which they were liberally supplied, as well as with old clothes, sailor's knives, twine, lucifer matches (of which they fully understood the use), and other articles: and they departed late at night, evidently well pleased with their reception.

Next day (31st) we made a good run to Molyneux Sound, where we anchored at 3 p.m., and I went ashore for an hour; but no insects turned up except a minute *Tinea*. On June 1st we started at daylight, and ran through the Guis Narrows, one of the grandest scenes in the Channel, at noon. Here the passage is contracted to less than a mile in width, the eastern shore being a series of colossal bluffs, rising sheer to a height of 2500 feet above the water, without a break, covered with snow more than half-way down, and most luxuriantly wooded in the lower portions; the western side, though not so high, is equally bold and precipitous, and even more rugged. Our halting-place for the night was Puerto Bueno, a lovely little inlet

enclosed in an almost complete circle of snowy mountains, though its shores are comparatively low and open, and afford much better walking than usual. I spent the remainder of daylight on shore, but observed only a few grubs of a moderate-sized Lamellicorn beetle, and a minute *Helix*. Mussels of excellent quality were abundant, and were brought on board and devoured in almost incredible quantities. We left at 6 a.m. on the 2nd, and the day being clear and still (a very rare circumstance here) we were at last able to fully appreciate the wild grandeur of the unrivalled scenery of the western Channels of Patagonia. The Cordillera of Sarmiento, a snowy range of mountains on the mainland, over 6000 feet high, was seen to great advantage: its summits being broken into the most extraordinary and fantastic shapes, and every valley filled with a deeply crevassed glacier, of the most lovely blue tint: while away to the southward, Mount Burney, a grand, solitary, truncated pyramid, 5800 feet high, appeared to close up the Channel in that direction, the whole forming a scene of indescribable magnificence, never to be forgotten. We put into Isthmus Bay for the night, but I did not land here: leaving again early next morning, the weather soon became thick and squally, and we were compelled to anchor in Otter Bay, among some small islands in Mayne Channel. Here we were weather-bound until the morning of the 5th: it rained and snowed a good deal, but I took advantage of a party going for mussels, to land on one of the islands, and to procure a few nice sea-shells.

We entered Magellan's Straits at 11 a.m. on the 5th, and anchored in Port Angosto, on the Fuegian shore, at 4 p.m., too late to land. This is a most beautiful harbour, extending inland about a mile, with a width of barely 250 yards, and completely shut in by wooded cliffs, 600 to 1500 feet in height. Leaving again early next morning, with a strong breeze against us, we got as far as Fortescue Bay, on the Patagonian side of the Strait: here I landed, but got nothing whatever. Next day (June 7th), we rounded Cape Froward, the grand promontory which terminates the South American Continent, at 8 a.m., and reached the Chilean settlement of Punta Arenas (Sandy Point) in the afternoon.

The weather had been steadily getting colder during our progress southward, and in the Straits of Magellan the country was covered with snow to the water's edge: at Punta Arenas everything was frozen hard, with ice on the pools and lagoons thick enough to admit of skating. In spite of this, in an afternoon's ramble, I found sundry *Geodephaga* and *Rhynchophora* (mostly of species obtained here by me in December, 1880) abundant under logs of wood, &c., as were also the larvæ of a species of *Agrotis*, these being, like the beetles, quite lively. The pretty green *Carabus suturalis* (not unlike a small *C. auratus*) occurred rarely, and I found a good many cocoons of a species of *Macromphalia* attached to the under-side of logs. The only Lepidopterous imago I saw was a small *Gelechia*? hibernating in companies of seven or eight under bark.

We left Punta Arenas on the morning of the 10th, having stayed only just long enough to procure coal, &c.; but owing to contrary tides and short daylight, we did not get fairly out into the Atlantic until 9 p.m. on June 11th. After a somewhat rough passage, we arrived at Monte Video on the evening of the 21st. We stay here for four or five days, and then leave for St. Vincent, Madeira, and Plymouth, where we hope to arrive before the end of August.—J. J. WALKER, Monte Video: June, 1884.

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DESCRIPTION OF THE LARVA OF *STENIA PUNCTALIS*.

BY THE REV. J. HELLINS, M.A.

After several fruitless attempts by others in former years at unveiling the life-history of this species, complete success has been achieved during the past season by Mr. W. H. B. Fletcher, who has reared the imago from the egg, and again from larvæ taken at large in their habitat. For instructions as to when and where the moth could be found he was indebted to the Rev. C. R. Digby, who, like myself, had captured it in more than one locality, sometimes almost on the beach, sometimes at the top of the cliff, but always close to the sea; the larva, when at large, must, in stormy weather, be quite within reach of the salt spray, but it has thriven very well without any such seasoning to its food in captivity.

Towards the end of the second week in August, 1883, Mr. Fletcher captured several moths, and some more again a little later, and in both cases obtained eggs from them; the larvæ were hatched in about a fortnight or rather more, and fed away readily on flowers and leaves of *Lotus corniculatus*, making awnings (not tubes) of very sticky silk; Mr. Fletcher carried his stock through on the same food, supplemented at times with clover. About Michaelmas Mr. Buckler, who had received eggs from him, sent me a larva, which I placed in a bottle, and, after a little time, rather neglected; however, to my surprise, I found that my neglect had done no harm, for this larva seemed to enjoy its food when damp and rotten rather more than when freshly gathered. Before long Mr. Buckler made the same discovery; he had been giving his larvæ knapweed and plantain, and on one occasion when changing the food was obliged to put back a decaying leaf, because a moulting larva was fixed on it, and the next time he looked there were three of them eating it in preference to the fresher leaves; and so through the winter his batch of larvæ remained shut up in tin boxes, and contentedly living among a mess of dead knapweed and plantain leaves, and heaps of their own frass, all spun together with fine but tenacious silk. They moulted four times in the autumn, and I think twice again in the spring, and in May several appeared to be full-fed. At this date Mr. Fletcher made an expedition with Mr. Digby to the locality in which the moths had previously been taken, and by carefully removing pebbles and stones was most fortunately enabled to find the larvæ at home, feeding under their silken coverings on vegetable rubbish composed of grass stems and roots, dead leaves of plants,

and withered *Zostera marina*; the larvæ thus discovered were not quite so far advanced as those in my possession, but were larger than Mr. Fletcher's own stock, which had been feeding all along on fresh food: in May and June they all became pupæ, and during the last ten days of June and the first week of July I bred several moths, Mr. Fletcher's moths appearing rather later; and on July 12th I received some eggs obtained by Mr. Sydney Webb from captured moths; probably the imago has rather an extended period of flight. I may add here that the newly-hatched larvæ of this season, from the first, ate withered leaves as readily as those freshly gathered.

Where or how the moths deposit their eggs we do not know; my own recollection is that of seeing them flying rather freely at my approach, but over a very limited area, during daylight, whilst, on one occasion, Mr. Fletcher found them hiding under the leaves of *Centaurea* and *Pyrethrum* during a gale; perhaps the egg is deposited on the under-side of the lowest leaves. It is roundish-oval in outline, flat, and soft looking; the shell thin, glistening, and thimble-pitted all over the slightly convex upper surface; in colour yellowish; its long diameter about $1\frac{1}{4}$ mm., the shorter diameter $\frac{1}{2}$ mm.

The newly-hatched larva is yellowish in colour, with dark head and collar, slender, with the segments well defined; it at once spins a silken covering, under which it feeds; it grows away through August and September. I have just now (October 8th) measured one, which is quite 12 mm. long, slender in figure, viewed from above pretty well uniform in bulk, except that the first segments taper slightly, but sideways the front segments and head are seen to taper considerably; the skin is very glistening and translucent, the colour a pale but warm amber, the food showing through blackish in whatever region of the internal vessels it happens to be; the head very shining, of light red tint; the collar on second segment large, brown, its pale median line edged with almost blackish-brown; the usual dots small, black, placed on large glittering warts darker than the skin, those on third and fourth darker than the rest; spiracles indistinct; legs pale; like the larvæ of *Pyralidæ* generally, it lives quietly enough on or among its food, but is very active when disturbed, wriggling and jumping backwards or forwards with agility.

The full-fed larva is about 19 mm. in length, with proportions much as before, slender, being stoutest at segment 8, with the back tapering each way slightly in a curve, the head narrower than segment 2; the skin at last less translucent, but still very glittering; general

colour of a pale yellowish stone tint, but all the middle space of the back shows ashy-grey from the internal vessels, and through this space runs the darker interrupted pulsating dorsal vessel; the segmental folds also show darker; the head very glittering, in colour clear reddish-chestnut; the collar is of a much darker brown, reaching across the whole length of segment 2 on the back, but curving forwards at the sides, and being cut in two by a pale line, and each half is bordered with darker brown again along this line, and also for a short way along the front and back edges; the spiracles are prominent, but not easy to see, and are ringed with brown; the usual dots are very tiny and jet black, placed on large shining warts; on each of segments 3 and 4 there is a pair of large roughly triangular warts near the front edge, and four rounder ones on each side, and all these are noticeably darker than the warts on the other segments, and apparently form a distinguishing feature; on the other segments the trapezoidals are placed on large warts of an oblong shape, the front pair being squarer than those behind, but with each pair the greater length runs transversely; these warts, with the lateral ones, which are rounder, are all pale blackish; there is no distinct anal plate; all the dots bear fine longish bristles.

Mr. Fletcher describes his larvæ, fed on fresh leaves, as being watery yellowish-green in colour, with sage-green warts, this difference of course being caused by the different colour of the food seen through the transparent skin.

The larva makes a toughish cocoon, lined with a fabric of white silk, and coated externally with leafy rubbish, about 15 or 16 mm. long, and about 6 mm. wide. The pupa is about 11 mm. long, slender, 2 mm. across the thorax; the eye-cases rather prominent; the tongue-, antenna- and leg-cases soldered together, are attached to the body as far as the end of the wing-cases, thence free, and reaching quite to the end of the abdomen, and over-reached by the spike only; the shoulders swell gradually from the head, the abdomen tapers very gently, the general figure is cylindrical; the anal spike is slightly curved, and is furnished with six curl-topped spines; the pupa-skin is smooth, not very shiny, under a lens appearing rather roughened; the colour generally yellowish-brown, the eyes, the tip and the rings of the abdomen, and the tip of the tongue-case, chestnut, the spike still darker.

Exeter: October 9th, 1884.

DESCRIPTION OF THE LARVA OF *CLEDEOBIA ANGUSTALIS*.

BY GEO. T. PORBITT, F.L.S.

For the opportunity of making acquaintance with this interesting larva, I am again indebted to the kindness of Mr. W. H. B. Fletcher, of Worthing. A few specimens reached me on June 13th last, and I described them as follows:—

Length, about an inch, slender, and of almost uniform width throughout: head and frontal plate glossy, the former has the lobes rounded, and is slightly narrower than the second segment: body cylindrical, the segments clearly defined, the 3rd, 4th, and 5th have several transverse depressions, which give them a wrinkled appearance, the remaining segments have each one transverse depression; the skin altogether has a tough appearance.

There are two forms:—In var. I, the ground-colour is dirty smoky-black: head perfectly black; frontal plate dark chocolate-brown; anal segment pale brown. The only other perceptible marking is the perfectly black, but indistinct, medio-dorsal line.

Ventral surface and pro-legs uniformly of a rather paler shade of the colour of the dorsal area, and having a tinge of dark green: the anterior-legs perfectly black.

In var. II, the ground-colour is pale chocolate-brown, strongly suffused, however, especially on the anterior segments, with dirty smoke colour: head perfectly black; frontal plate chocolate-brown, edged in front with black; side tubercles and spiracles smoke colour.

Ventral surface and pro-legs pale chocolate-brown, with a greenish tinge, the 2nd, 3rd, and 4th segments, and the anterior-legs, black.

Mr. Fletcher found the larvæ feeding on damp ground in a species of moss, which, after examination of the old withered remnants left by my larvæ, Mr. Hobkirk believes to be *Hypnum cupressiforme*. I kept the moss saturated with water, and probably the larvæ would not have kept healthy had it been allowed to become dry. They live completely hidden in the moss, but their whereabouts is easily seen from the patches of frass which are thrown above and kept together by silken threads which the larvæ seem to spin over where they feed.

The cocoon is shaped somewhat like that of a *Zygæna*, and is formed of firmly-spun white silk among the moss. The pupa is from half to five-eighths of an inch long, of ordinary shape, and with all the parts clearly defined: it is highly polished, the colour rich brown, wing-cases bright yellow, but all the parts margined with brown; eye-cases and abdominal point dark chocolate-brown.

The imagos emerged from August 2nd to 8th.

Huddersfield: October 6th, 1884.

NOTES ON THE LARVA, &c., OF *ASYNARCHUS CÆNOSUS*, CURT.

BY KENNETH J. MORTON.

Asynarchus cænosus, the only British representative of a genus of *Trichoptera* which is boreal in its distribution, is a very common insect during the months of August and September on the elevated moors of this district, and no doubt occurs in similar localities all over Scotland and the northern part of England. This season I succeeded in rearing the species, and am thus enabled to give a few notes concerning the larva, nymph, and case.

The larvæ were abundant during the summer in the pools of a peat bog (about 800 ft. above sea-level), and, as far as I could discover, were the only caddis-worms which occurred there. Out of a few taken home at the beginning of August and placed in a glass vessel with a piece of peaty earth, one in a few days fixed its case to the peat and became quiescent. On the evening of the 31st of the same month, a nymph was observed swimming about in a vigorous manner. It very soon left the water and ascended to the muslin covering of the glass. The perfect insect, a ♀, appeared after a short interval.

The larva appears to be of the usual *Limnophiliform* type, with a small ovate head, almost quadrate prothorax and transverse mesothorax; the abdominal segments slightly depressed, and from the third to the penultimate inclusive with a lateral thick fringe of very short, fine hairs. The head and pronotum are blackish-fuscous in colour; mesonotum paler fuscous, with dark dots and streaks, and narrowly margined with blackish posteriorly; rest of body greenish-yellow; respiratory filaments whitish.

A nymph taken from its case, and probably not quite mature, was uniformly pale yellowish, excepting the eyes, which were blackish. The mandibles agree in form with the figure of those of *Limnophilus* in the "*Trichoptera Britannica*." The respiratory filaments rather numerous, arranged on either side of the lateral lines; the last three abdominal segments have a strong lateral fringe; anal extremity with two long, slender processes (present also in *Stenophylax* and *Halesus*, and probably common to all nymphs belonging to the *Limnophilidæ*). The tarsi of intermediate legs fringed with fine, rather long, hairs: these legs, I take it, are the principal natatory organs in the nymph.

When the larva is young, the case is rather loose, long, slender, slightly curved, composed of imbricated short lengths of fine stems. The older case is firmer, made of what appear to be small pieces of

bark, short lengths of stems, &c. ; it is very slightly curved, and of nearly equal diameter throughout, in shape not unlike the cases made by *Stenophylax*. The case from which the insect was bred had the one end closed with a little heap of sand (in nature, vegetable fragments, irregularly drawn together, are made use of) ; the other end was closed with a membranous network.

McLachlan (Mon. Rev. Tr. Eur. Fauna, Sup., pt. II, p. xxviii) describes the case of *A. Thedeni* from Lake Ladoga as almost entirely composed of stony fragments. He says, however (*l. c.*, p. xxvi), that *A. cænosus* is an aberrant species of the genus in which it is at present placed. It is very probable, at the same time, that the materials employed by *A. cænosus* may vary according to the conditions in which the larva is placed.

Carlisle, N. B. : October 1st, 1884.

NOTES ON BRITISH *TORTRICES*.

BY CHAS. G. BARNETT.

(Continued from p. 63).

In response to my request (*cf.* Ent. Mo. Mag., xix, 136), specimens of the original reputed Scottish *Retinia duplana* were kindly sent to me by the Rev. H. Burney and Mr. J. B. Hodgkinson. These were certainly *R. turionella*, but smaller and darker than those taken in the South of England. Mr. A. H. Jones has now allowed me to examine two of his specimens taken in the middle of June among young Scotch Fir at Rannoch. These interesting specimens help very much to explain the insertion and long maintainance of the name of *Retinia duplana* as a British species. They are exceedingly dark in fore- and hind-wings, much darker than any English *turionella* that I have seen, not more than half the size of the latter, and the fulvous patch is almost confined to the apical space. Nevertheless, they agree in form and markings most accurately with *turionella*, and I have no hesitation in saying that I believe them, and all other supposed British *duplana*, to be truly *turionella*. The bright orange colour of the head and collar is very persistent.

The genuine *duplana* from Germany is a very glossy mottled species, with rather more elongated fore-wings and a grey head and thorax.

Pembroke : September 19th, 1884.

BRITISH HOMOPTERA—AN ADDITIONAL SPECIES OF *IDIOCERUS*.

BY JAMES EDWARDS.

IDIOCERUS DISTINGUENDUS.*Idiocerus distinguendus*, Kbm. Cicad., 157, 9 (1868).„ *cognatus*, Fieb., Verh. k. k. z.-b. Ges. Wien, xviii, 455 (1868).

Elytra lacteo-hyaline with three wide brown bands, which do not reach the costa, and are placed as follows, viz., one at the base, one just beyond the middle, and one occupying the 2nd, 3rd, and 4th apical areas. Face greenish-yellow, more or less suffused with fuscous, the latter colour, in strongly marked examples, occupying the entire surface from the base of the crown as far as the lower margin of the eyes, leaving a spot adjoining each eye, also a triangular central spot on the base of the crown, and a transversely-oval spot adjoining the lower margin of each eye, of the pale ground-colour. The two last-named spots are frequently connected by a pale line. These markings, however, are exceedingly variable, and more or less perfect in different individuals. Pronotum greenish-yellow in the ♂, somewhat bluish-white in the ♀, more or less suffused with fuscous in such a manner as to leave the margins narrowly, a narrow central line, and a small somewhat round spot near the middle on each side, of the pale ground-colour; in front of each pale lateral spot are two or three (generally two) black points. Scutellum pale, with a triangle on each side of the base and two small roundish spots near the transverse channel, fuscous. Elytra as stated above; nerves white, except in the brown bands, where they are dark brown, those of the corium distinctly bordered with punctures; base and apex of the anal nerve white; first sub-apical area parallel-sided, about two-thirds as long as the 2nd, 1st apical area reaching about three-fourths as far as the 4th. Abdomen black above, with narrow green margins to the segments, greyish-green beneath. ♀ genital plate with its hind margin somewhat roundly produced, pale, with traces of a broad dark central stripe, which is, perhaps, caused by the oviduct showing through. Legs pale, apex of tarsi more or less fuscous.

♂ wanting the usual plate on the antennal setæ.

♀, when fresh, with the face and legs rather strongly tinged with pink.

Length, ♂, 2½ lin., ♀, 2¼ lin.

Inhabits white poplar; 2 ♂ 12 ♀ examined.

Easily confounded with *Id. tremulæ*, from which species the paler bands of the elytra, and the constantly pale costal, sub-costal, 1st sub-apical, and 1st apical, areas serve to distinguish it.

Norwich: October 10th, 1884.

[I quite concur in the identification of this species. Kirschbaum's description has priority by its first publication in the "Jahrbüchern des Nassauischen Vereins für Naturkunde," xxi and xxii (1867 and 1868).

From the one poplar tree (*Populus alba*) in Beaufort Gardens, Lewisham, I obtained, at the end of September and beginning of October of this year, altogether more than fifty examples, of which only

two were males, which is curious, and if the disparity be real is suggestive of polygamy. In former years I have often beaten this tree without any result; the present occurrence of this *Idiocerus* seems, so far, to confirm Kirschbaum's remark concerning it—"Auf *Populus alba* und *canescens* stellenweise häufig." Failing the opportunity to draw up a description, Mr. Edwards has had the goodness to do so from some of my captures.—J. W. D.]

A POSTSCRIPT CONCERNING PARTHENOGENESIS IN *ZARÆA FASCIATA*.

BY J. A. OSBORNE, M.D.

The observations made by me this year on *Z. fasciata* may have some interest as bearing on the questions of parthenogenesis and sex. Last year (1888) I had 310 cocoons made by larvæ that had been taken off the bushes the year before. Of these about 28 were ichneumonized, and from the remaining 282 (or thereabouts) 142 living flies (of which only one was a ♂) were excluded during the summer. On opening the other cocoons I found dead larvæ, nymphs and flies, in 31 of which the sex (♀) was determinable, making 172 females in all to one male. In the present year the results have been somewhat different. I had a stock of 311 cocoons classified as follows: 270 were what I may call singly parthenogenetic, i. e., reared from parthenogenetic eggs laid by flies emerging from cocoons spun the year before by larvæ taken from the bushes; 32 were doubly parthenogenetic, i. e., bred from unfertilized flies, themselves parthenogenetically bred from larvæ taken in 1881. These and their parents, therefore, had been in captivity and under artificial conditions some three years. The third lot consisted of 9 cocoons reared from eggs laid after observed union between the ♂ and ♀. From the 270 cocoons only 100 living flies were excluded, and of these 3 were males. In the remaining 170 cocoons, besides 134 dead larvæ and 1 mouldy nymph, I found 32 dead ♀ and 3 ♂ flies; that is, no less than 6 ♂ to 129 ♀ flies, or a proportion of 1 : 21.5; or, if we add to these 129 ♀ flies, 23 more from the other two lots, making a total of 152, the proportion of ♂ to ♀ flies is still only lowered to 1 : 25.3 as against 1 : 172 in those flies bred from free larvæ and only one year in confinement.

From the 32 doubly parthenogenetic cocoons only 4 living flies were excluded, all ♀, and in the unopened cocoons I found, besides dead larvæ, 11 more ♀ flies. The 9 cocoons from presumably fertilized

eggs yielded 5 living and 3 dead ♀ flies; a single insect perished in the larva stage. All the cocoons had been kept through the winter under similar conditions in metal boxes in a drawer. Of the 4 doubly parthenogenetic flies only one laid a few eggs which did not develop. Besides the 6 male flies, the lot of 270 yielded also at least 4 ♀ flies, which showed one of the ♂ characteristics to a greater or less extent, that is, the basal ring of the abdomen, in place of being quite light as in the ♀, was much darker in various degrees, almost to perfect black. But none had the masculine lateral tufts at the apex of the abdomen. The males, when put with females for the purpose of breeding, seem invariably to suffer mutilation in the loss of their tarsal joints, especially of the fore feet, in their struggles with the female. In union, the attitude observed was venter to venter.

Whether, then, it is to be attributed to continued parthenogenesis or to the effect of prolonged artificial and unfavourable conditions of life, the changes observed appear to be threefold: *first*, there is a smaller number of flies excluded alive from the cocoons, thus—in the 282, 270 and 32, respectively came out 1 in 2, 1 in 2.7, and 1 in 8; whilst in the case of the 9 cocoons from fertilized eggs, more than half excluded living flies, and in all but one of the remainder the insects had reached the imago state: *secondly*, there is progressive infertility; flies from fresh larvæ lay eggs abundantly, their descendants much more sparingly, and in the third generation hardly any eggs were produced: *thirdly*, we see a striking increase in the proportion of males in the second generation.

That so many insects should perish in the cocoon points perhaps to the effect of unfavourable artificial conditions. The diminution in fertility might also be referred to weakening of the constitution from the same cause; but the increase in the number of males in the second generation, and the increased viability in the 9 cocoons from fertilized eggs, seem to indicate a necessity for recurrence occasionally to sexual reproduction. It is curious that in the case of bees, &c., the exactly converse necessity prevails; without a mixture of agamic reproduction the species would become extinct. On the theory of Von Siebold, &c., fertilized eggs of bees would yield no males in the next generation, and a generation of virgins would produce nothing but drones, with which the community would come to an end in the grandchildren.

Milford, Letterkenny:

October, 1884.

A NEW SPECIES OF *CIS*.

BY THEODORE WOOD.

I have much pleasure in recording the capture of this most singular insect, which, as it appears to be unknown on the Continent, I venture to describe as new to science. I have met with it upon three occasions during the present year. Firstly, a single ♂ specimen beneath the bark of a decaying pine-tree, on January 23rd; secondly, September 15th, in the utmost profusion, from boleti upon a decaying birch; and, thirdly, September 23rd, a single ♂ from a large fleshy fungus upon an ash-tree, a mile and a half from the scene of the former captures. All three localities are at West Wickham, and it is astonishing that so conspicuous an insect should have been passed over for so long, more especially in a district which has been worked by some of our best collectors.

As will be seen from the description, the male insect can be at once distinguished from any of our British species, and would appear to be most closely allied to *Cis quadridens*, Mellié, from which, however, it is abundantly distinct. The female, being without the lamellæ upon the clypeus and the thorax, is less conspicuous, but, when fully mature, could hardly be confounded with any other species. I have taken the insect in all stages of its development, and find that in the ♂ pupa the lamellæ are fully as noticeable as in the imago.

I append a description, which, with his usual kindness, the Rev. W. W. Fowler has drawn up for me.

CIS BILAMELLATUS, sp. n.

Oblongus, sub-cylindricus, fusco-testaceus, parum nitidus, parcius flavo-pubescent. Caput modicum, lævissime rugulosum, oculis prominulis; antennis flavo-testaceis, clavâ fuscâ; clypeo feminae simplici, maris in lamellam latam producto. Pronotum maris sub-quadratum, margine anticâ posterâ vix angustiore, valde depressâ et dehinc in lamellam latam sicut in clypeo productâ, lateribus antrorsum leviter rotundatis et contractis; feminae longius, lateribus minus rotundatis, paullo magis antrorsum sensim contractis; amborum densius subtiliter punctatum, interstitiis lævissime rugulosis, angulis posticis rotundatis, medio tenuissime ad basim lævi, leviter marginatum, pube paucâ flavâ sparse vestitum. Elytra pronoto haud angustiora, fortius et densius rugose punctata, pube flavâ ordinibus dispositâ vestitum, leviter marginatum, apicibus sub-rotundatis. Pedes testacei.

Valde differt clypeo et pronoto maris in lamellas pari magnitudine productis, margine anticâ plerumque rectâ, interdum plus minusve emarginatâ instructas.

Pitch-brown, or yellow-brown, rather shiny, scantily covered with yellow pubescence. Head not very large, slightly rugulose, with the eyes prominent; antennæ yellow, club blackish. Clypeus simple in female, but in male produced into an upright and broad plate. Thorax of male sub-quadrate, narrowed in front, with anterior margin produced into a broad plate, similar to that upon the clypeus, sides anteriorly rounded; that of female longer than broad, sides less rounded, and more gradually contracted in front; in both sexes closely and finely punctured, with interstices slightly rugulose, posterior angles rounded, rather emarginate, and scantily covered with short, yellow pubescence. Elytra not much narrower than thorax, more strongly and closely punctured, slightly emarginate, with rows of yellow pubescence, apex somewhat rounded. Legs testaceous. Length, $\frac{3}{4}$ — $\frac{1}{2}$ lin.

In conclusion, I have only to ask any Coleopterist wishing for specimens to communicate with me.

5, Selwyn Terrace, Upper Norwood, S.E.:

October 13th, 1884.

MORE PROOFS OF APHIDIAN MIGRATIONS.

BY JULES LICHTENSTEIN.

When Kaltenbach made a character of the *habitat* of the under-ground plant-lice, and established a division for them under the name of *Erdläuse*, *Hyponomeutes*, of Hartig, and *Rhizobius*, of Burmeister, he was perfectly aware of the insufficiency of such a negative character as was that of "winged forms unknown."

For me, since the very day when I gave the history of the migration of *Phylloxera* from the roots to the leaves of the plant (1879), I said, I expect to show, some day or other, more astonishing facts of migration from plant-roots to trees, and all gall-making plant-lice will some day prove to be only a stage of life of under-ground species.

I had soon discovered that *Aploneura lentisci*, Pass., passes from the *Lentiscus* galls to the roots of *Bromus sterilis*, *Tetraneura ulmi* and *Tetraneura rubra* from the elm to *Zea mais*, *Cynodon panicum*, &c.

Now, this year, I had the opportunity for the first time since many years to be at leisure in the country in October, and to make new discoveries. I had, as usual, tied round the stems of some elms and poplar the paper strips which so well attract the flying plant-lice of the *pupifera* stage, and at the same time I searched the roots of all plants where I saw under-ground lice, and kept them in bell-glasses under muslin, to see if really these *Hyponomeutes* remained always apterous. I had, amongst these earth lice, the common *Rhizobius menthae*, Passerini, which I had kept for years and years without success, and the *Rhizobius sonchi*, Pass., which also had given me constantly, in spring and summer, apterous descendants. I was not a little surprised now, late in the season and rather cold weather (6° Réaumur),

to see some of my captives acquiring wing-cases, and shortly after becoming winged, and showing the character of the genus *Pemphigus*, Hartig.

Therefore, these under-ground lice pass from this day from the genus *Rhizobius* to *Pemphigus*, as the winged form is no longer unknown, and we ought to say, *Pemphigus menthæ* and *P. sonchi*.

But this is not all; the very same day in which I obtained in my study these winged forms, my strips of paper on the trees furnished me with the same lice in liberty, the first on the elm, the second on the poplar.

As regards the elm, little doubt is possible, there is only one *Pemphigus* on that tree, described already by Haliday, under the name of *Eriosoma pallida*, some fifty years ago (1838), and the *Pemphigus* of the mint-roots is exactly similar to the example taken the same day on the elm. I think *Rhizobius menthæ* must disappear altogether, as it is the under-ground stage of *Pemphigus pallidus*,* of which the whole history is now known.

Just the same is to be said of *Rhizobius sonchi*, which is the under-ground form of *Pemphigus bursarius*, a Linnean name, which has, of course, the priority. Yet this second fact is not so sure as for the elm gall-louse, as there are to my knowledge 20 to 25 different species of *Pemphigus* on the poplar (in Europe and America). But I think, by the markings of the antennæ, it is *bursarius*, easy to distinguish from all others by its gall fixed on the stem. The only one which does not fall in winter, but remains on the tree.

I must add, for those who, like Prof. Rudow, describe the gall-lice found late in the season in the gall as the authors of the swelling, that there is a great chance of error in that proceeding. The lasting gall of *Pem. bursarius* is very often adopted by all winged gall-lice of the pupiferous stage, as a convenient winter dwelling for depositing their sexuated proles, which pair in the gall and conceal their eggs in the same; so that now, in the first days of October, for an example or two of the true *Pem. bursarius*, there are hundreds of *P. spirothecæ*, *P. affinis*, *P. pyriformis*, *P. marsupialis*, *P. populi*, &c. Even true Aphides are not uncommon in these galls, and *Chaitophorus populi* mixes often with the *Pemphigi*, in order to deposit its eggs in the same galls.

In conclusion, *Rhizobius menthæ* and *Rh. sonchi* must be placed as synonymous to *Pemphigus pallidus* and *Pemphigus bursarius* as under-ground forms of the same.

Montpellier: October 6th, 1884.

* The genus *Eriosoma* was not adopted on the Continent, where the Hartigian names prevailed, and even Buckton, in his "British Aphides," gives *Eriosoma* only as a synonym.

On the duplication of generic names employed by Walker.—It is well known that certain Lepidopterists ignore the greater part of Walker's work; but recently my friend Meyrick has employed at least one of the generic names used by that author in a totally different sense from that intended by the original describer.

The "genus" *Barsine* was characterized by Walker in the second volume of his Catalogue of Lepidoptera-Heterocera for the reception of a *Lithosiid* moth congeneric with *Mittochrista*, but representing a group in that genus consisting of species larger and somewhat more coarsely ornamented than the *M. miniata* group.

The name *Barsine* has now been applied by Meyrick to a group of Geometrites; and as I find that writers in New Zealand are already beginning to adopt this wrong use of Walker's generic name, I feel called upon, although with reluctance, to point out the error; I would ask Mr. Meyrick to alter it himself, but, as I may have to quote the genus before many months have elapsed, and as it would be probably a year before I could discover what name he had employed, I must myself propose that the New Zealand genus be henceforth known by the name MEYRICKIA.—A. G. BUTLER, British Museum (Nat. Hist.): September 26th, 1884.

On the probable extinction of Lycæna Arion in England.—Mr. Herbert Goss in his interesting paper "On the probable extinction of *Lycæna Arion* in Britain" (cf. Ent. Mo. Mag., xxi, 107), inclines to the opinion that the sudden and total disappearance of *L. Arion* from the Gloucestershire localities may have been due to an unprecedented succession of mild winters, &c. In this conclusion I can quite agree with him.

It may be observed, that although the abnormal meteorological vicissitudes experienced throughout Great Britain during the past six or seven years must have not only considerably checked the increase of many species of *Lepidoptera*, but have also greatly reduced the normal numbers of some other species, still, a series of unfavourable meteorological conditions during a period of several years would hardly lead to the extermination of those species which are generally distributed. Even the not unimportant assistance of the most assiduous collector and an occasional grass or furze fire would fail to effect so much. In the case, however, of local species, the chances of escape from such a combination of hostile agencies would be rather precarious.

With such species as *L. Arion*, confined to somewhat limited areas of widely separated districts, there exists what may be termed a predisposition to extinction, and a series of seasons meteorologically unfavourable may effect the extermination of the species, first from one and then another of its limited retreats, until its final extinction in the country would be accomplished.

By predisposition to extinction I mean, that when the limit of the range of a species is reduced to a very small portion of a district, independent of the range of its food plant, it may be assumed that that species is in danger of extermination from the operation of one or the other, or a combination of several unfavourable conditions. In effecting a "sudden and total disappearance," I should certainly consider unfavourable meteorological conditions to be the prime influence.

Almost the same remarks will apply to any species of *Lepidoptera* restricted to the limited habitat of its food plant; with this additional contingency, the food

plant itself might be exterminated either by the occurrence of a land slip, or in the case of an annual plant, by some animal or animals devouring it; or the eradication of the plant might be effected by the improving hand of man.

According to Mr. Goss, *L. Arion* occurred in some numbers in two localities in Gloucestershire during the years 1876 and 1877. The species was rare there in 1878, and from that year to the present time not a single example has been captured in Gloucestershire.

Now, on the hypothesis that the issue of the 1877 *L. Arion* were, all, but a few, destroyed in one or other of the earlier stages by some unfavourable meteorological influence, the scarcity of the imago in 1878 is accounted for. Mr. Goss does not say whether the few *L. Arion* seen in 1878 were captured or not, but any way, this would matter but little. Probably but few ova would be deposited, and the larvæ, if any, resulting from them would, if not entirely annihilated by the wretched spring of 1879, have been so considerably reduced, as to come within a perilous distance of such an occurrence. Since 1879 the ungenial nature of our springs has precluded all chance of the species recruiting its numbers, but, on the contrary, has most probably completed the business of exterminating *L. Arion* from the Gloucestershire localities.

L. Arion still exists in South Devonshire (or did last year), and a few favourable seasons might tend to increase the numbers of the species in its particular haunts in that county; but I am afraid that its tenure on its Devonshire estate is not a very secure one, and that in the near future "the large blue" will be, as Mr. Goss suggests, extinct in Great Britain.—RICHARD SOUTH, 12, Abbey Gardens, St. John's Wood: October 15th, 1884.

Abundance of V. cardui and other Lepidoptera in Ireland.—It may be interesting to record when the abnormal abundance of any species of *Lepidoptera* in certain seasons in England corresponds with a similar profusion on this side of the channel.

Mr. Barrett last year referred to the prevalence of large numbers of *Plusia gamma*, and propounded a query whether this might not indicate an immigration of that species on a large scale from the Continent.

Now, at Dursley Island, the promontory which stretches out into the Atlantic on the west coast of Ireland, between Kenmare and Bantry Bay, a locality singularly unlikely to be thus replenished, I observed last summer a great profusion of this insect, sporting on the flowers of the thrift. And I think it likely that the cloud of moths which, in the same autumn, visited the lantern of the Fastnets Lighthouse was composed of this species, flying on a thick night from land toward the illumination. Unfortunately, no specimens were preserved.

This summer, an abnormal abundance of *V. cardui* has been noticeable all over Ireland (I cannot speak of the most northern counties, except Derry), from Cork and Waterford, to Westmeath, Monaghan, and Derry; and in the west, Connemara and Sligo.

Now, last season I observed a tolerable number of this species, which is notoriously fitful in its apparition in this country, and it seems that the sunny season has favoured its propagation. I may note that I observed its larvæ feeding on the giant mallow.

V. Atalanta has appeared occasionally and singly here and there this summer as *cardui* did last year, and I should predict a similar abundance of it, therefore, next year, if the weather be propitious.

My observations, therefore, lead me to the conclusion that climatic influences rather than immigration account for these phenomena. As to *Colias Edusa* (*C. Hyale* is not, I think, found in Ireland) I have not seen or heard of its occurrence for some years in any abundance, and I have met with none this summer.

Will the Editors kindly state if the swarm of caterpillars which visited the Rhondda Valley were those of *Chareas graminis*,* as, from the description of their life history quoted from a local savant, not much could be gathered.—W. F. de V. KANE, Kingstown: October 16th, 1884.

Nonagria sparganii, Esp., at Deal.—Amongst some moths captured for me at Deal by my mother at the beginning of September, there was a species of *Nonagria* unknown to me at the time, but which I have just found, on comparison with the European Collection at the British Museum, to be *N. sparganii*. The specimen was netted when on the wing at dusk in the garden of a house in Park Street. This insect, although common on the Continent, has only recently been discovered in this country by Mr. Sydney Webb.—R. MELDOLA, 21, John Street, Bedford Row, W.C.: October 18th, 1884.

Laphygma exigua at Pembroke.—On the 19th September a kind friend at Pembroke drove us over for a "last fond lingering look" at one of our favourite resorts; a lovely bay in a wild stretch of rocky coast facing the Atlantic and backed by extensive sand warrens. After securing the horse at the nearest available spot, we were walking over the warren towards the shore, when from our very feet sprang up a moth, which, from its aspiring flight and whitish hind-wings, was instantly distinguished from the hosts of *Stenopteryx hybridalis* around us. It pitched down again at once into the very short grass, head downwards, actually resting on the grass with its head on the ground as though striving to burrow. In this position it was instantly recognisable as a lovely specimen of *Laphygma exigua*; but, before I could box it, it sprang up into the air perpendicularly as before and again plunged down, this time into a tuft of *Ammophila*, where, by good fortune, I was able to secure it. The sun was shining brightly at the time, and *Lycæna Agestis*, *Scopula ferrugalis*, and *St. hybridalis* were very lively, but no other specimen of *L. exigua* could be disturbed.—CHAS. G. BARRETT, 68, Camberwell Grove, S.E.: October 10th, 1884.

Acronycta alni at Wisbech.—A fine larva of this species, which appears to be less rare in Norfolk than elsewhere, was found at Castle Rising at the end of August, feeding on a standard rose.—A. BALDING, Wisbech: October, 1884.

Variability of Tortrix Lafauriana.—On looking for this species in the locality

* No precise information came to hand; but it is believed the species was *Heliophobus popularis*.—EDS.

where I accidentally captured a specimen last year, I found it quite abundant in the larval state. It appears to prefer the low isolated bushes of *Myrica gale*, on which it feeds, rather than those bushes which are growing in dense patches and are more luxuriant. Only one or two larvæ could be found on a bush, so that I imagine the eggs are laid singly; but over a large expanse of small, scrubby, separately-growing bushes of bog myrtle, scarcely a bush appeared to be uninhabited by the species. I visited the locality again when my specimens were emerging, and found the insects flying in plenty. By standing quite still they might be seen flitting about among the low bushes, even several at a time; but, on moving towards them, they fly quickly into the nearest bush. There is considerable variety among the insects I have taken, assimilating to several allied species: the predominating colour is a light yellowish-brown, somewhat like *corylana*; others are a greyish-brown, like *sorbiana*, or the deep reddish-brown of *heparana*; and there are intermediate tints, but in all cases there is a far more silky appearance than the species named, and all are more uniformly reticulated. The males only show any markings which are darker towards the costa. Many have two costal blotches, and in some specimens the blotch near the base of the wing is produced as a fascia obliquely across the wing, somewhat like the blotch in *heparana*, but instead of there being an elbow projecting on the inner edge, the edge is nearly straight, excepting a slight hollow near the inner margin. The external edge of the fascia is twice bluntly angulated, and sometimes faintly united with the sub-apical blotch.—ID.

Notes on the Geometrinæ of Cambridge.—The larvæ of *Epione apiciaria* and *Pericallis syringaria* were scarce last spring. The larvæ of *Iodis vernaria* may generally be found on the *Clematis vitalba* growing on the Cherryhinton chalk-hills, but it is not very abundant this autumn, and it was still less so last year. The perfect insect was scarce this summer. The larvæ of *Metrocampa margaritata* were plentiful on hornbeam last April and May, and those of *Crocallis elinguaris* were common on hawthorn at the same time; naturally the perfect insects have not been scarce. *Rumia orategata*, *Halia wavaria*, *Abraxas grossulariata*, and *Camptogramma bilineata* have been even more than ordinarily abundant; indeed, the three latter have absolutely swarmed in our garden, and *Boarmia rhomboidaria* has also been very common. I bred *Eupithecia assimolata* last July from a green caterpillar found in June in united leaves on the top shoots of a black currant bush.—ALBERT H. WATERS, Mill Road, Cambridge: September 10th, 1884.

An enigma.—In October, 1860, I beat for the first time a number of the larvæ of *Eupithecia succenturiata* from *Artemisia vulgaris*. This plant is rather abundant on one side of Exeter, but, as happens so often with species that feed on some tree or plant of common occurrence, the locality for the pugs is very limited in extent, and except on two sides of one field it is in vain to hunt for them, however tempting the mugwort may appear in other hedges. This spot I have visited in most years, but with varying success; latterly, the greater care of the farmer in keeping his hedges pared has a good deal injured one's sport, and sometimes it has been difficult to get even a couple of larvæ, where twenty years ago fifty or sixty could be got easily. Together with *succenturiata* there have always been a few *absinthiata*, and

now and again (of course) *castigata*, also stray examples of *H. thymiaria*, and one or two other *Geometra*; but last year (1883) there turned up what the late Mr. Buckler termed a "puzler." I had sent him without examination the whole of my first take from the mugwort, but when, at his desire, I went a second time, and the larvæ had grown bigger, I found amongst my captures one that I could not determine; so, when I sent it on I called his attention specially to it: in his reply he told me he had already detected a similar larva in the first consignment, which he had placed by itself for observation, and that he had at length come to the conclusion that it was something he had seen once before, but did not know what to call it. Dr. Knaggs had on one occasion sent him this larva (I presume from somewhere on the South coast), but the moth had not been bred.

For a time, therefore, we were very pleased at our luck, and looked to be able to announce some species at least "new to Britain;" but our hopes were not destined to be long-lived: one of these two larvæ my friend injured when changing its food, and the other gradually ceased feeding, and died of inanition, though it had been tried with various flowers, and had seemed for a time fonder of *Solidago virgaurea* than of the *Artemisia*; it was captured about the middle of October, and it lived on to November 21st or 22nd.

This year again I visited the locality on October 4th, and the first larva that fell into my umbrella (I got but a bare half-dozen of all sorts on that day) was another of these puzzlers; whether or not I hurt it, I cannot say, any way, I was soon spared any uncertainty, for after it was boxed it never fed, and in three or four days' time was dead, and I have not been able to find another.

In the hope that some one else may be more fortunate, I send this note, with the following description of my this year's example:—

Length, 13 mm. Figure rather stumpy, skin rugose, ground-colour rich creamy-white, head brown, the dorsal thread rather darker than the ground, and bordered throughout with strong streaks of full brown, which are widest just at the middle of each segment, and narrow where they meet at the folds; in the same way the brown sub-dorsal line varies in width, swelling out in the middle of each segment, and tapering to the folds; on segments 5—9 these lines, dorsal and sub-dorsal, are united at their broadest by a deeper brown suffusion, which leaves the fold pale, but encloses the front pair of pale trapezoidals, and is hollowed out behind on either side the dorsal line so as to let the hinder pair of trapezoidals stand as the apices of two pale spaces extending to the fold, and altogether presenting something of the effect of a good fat M, supposing its middle V filled up; there is a redder brown waved line just above the spiracles, which stand on pale ground colour, and beneath them a darker brown suffused region fading off paler into the pinkish-white of the belly, and there is a central ventral line of brown.

Expallidata, perhaps, comes nearest to this larva, but the difference is apparent on comparison, and the stranger belongs to a smaller species.

I am conscious my description does not express exactly what I see; however, Mr. Buckler made very careful drawings, both life size and magnified, and Mr. Bignell has now very kindly figured two segments for me, and preserved the last larva; we have ample materials for identification, therefore, when the larva turns up again.—J. HELLINS, Exeter: October 15th, 1884.

Scarcity of Diasemia literalis in Pembrokeshire.—I have just (August 7th) paid a visit to the *literalis* ground. I left home by the 10 a.m. train, and returned at 8 p.m.: the day was intensely hot. By extremely hard working I took eight specimens. It is only just coming out, so I must go again.

On a second journey I worked hard two days, and brought back in all nine *D. literalis* and twelve *Eupacilia Mussehliana*. I got up the second morning at half-past 5, for the chance of a flight before the sun got hot, and obtained only one moth. I went down again for the afternoon flight, and captured one *D. literalis* and one *E. Mussehliana*; so all one day's labour was for three moths.—C. G. BARRETT, Jun., Pembroke: August 21st, 1884.

Notes on the Tortrices of Rannoch.—An account of the *Tortrices* I met with at Rannoch during the last half of June, may not be devoid of interest.

I reached Kinloch on the 14th June, and on the following day I visited the Black Wood. The only species I met with on this occasion was *Phoxopteryx myrtillana*, which was very common among *Vaccinium*.

A plantation of young Scotch firs proved to be rich in species. Flying briskly round the tops of the trees from morning until late in the afternoon, *Coccyx cosmophorana* was not uncommon, and I here also took a fine series of *Mixodia rubiginosana* and *Retinia pinivorana*, also five *Retinia duplana* of our lists (Scotch form of *Retinia turionana*?), and one *Stigmonota coniferana*.

In open places between the fir-trees, *Phoxopteryx uncana*, *Penthina dimidiana*, *Clepsis rusticana*, were all more or less common, and *Eupacilia ciliella* absolutely swarmed.

On the 20th June, I took a fine series of *Euchromia arbutana*, *Euchromia mygindana*, and *Coccyx nemorivagana*, on the hills, flying in the afternoon sunshine among their food-plant, *Arctostaphylos Uva-Ursi*. *Mixodia Schulziana*, and *Phoxopteryx unguicula*, occurred commonly among heath; *Penthina pralongana* and *Phlaodes tetraquetra* among birch; and *Grapholitha campoliliana* among sallow. The last two species differed considerably from the southern form.

On the 24th June, I again visited the Black Wood. *Tortrices* had now increased in numbers, for, in addition to *Phoxopteryx myrtillana*, which was still on the wing, *Mixodia palustrana*, *Coccyx ustomaculana*, *Sericoris lacunana*, *irriguana*, and *Daleana* were all to be met with rather commonly among *Vaccinium*. *Irriguana* is, I believe, considered only a small form of *Daleana*, and I think it will be proved some day that *Daleana* is only another form of *lacunana*. I also took *Stigmonota coniferana* not uncommonly flying around the branches of the larger fir-trees, and one *Coccyx cosmophorana*, ♀, the only specimen I met with in the Black Wood.

Although the days were mostly fine, they were not fine enough for "hill work," and it was not until the 25th June that a favourable opportunity presented itself for visiting the higher slopes. *Penthina Staintonian* was then nearly over, for I only secured four or five fine specimens. They were flying among *Vaccinium myrtillus*, upon which the larva is supposed to feed. On the same ground I took three beautiful *Amphysa Gerningana*. I was surprised to meet with the species at such an elevation, considering that in more sheltered localities on the Loch side it had not yet put in an appearance. On the brow of the hill, among "grey moss," *Scoparia alpina* was common, one or two flying up at every step.

Of larvæ, I collected only a few, but I may mention that larvæ feeding in the terminal shoots of *Myrica gale* produced a beautiful and varied series of *Podisca semifuscana*.—A. H. JONES, Shrublands, Eltham; Kent: September 13th, 1884.

Penthina Staintoniana, Scotch form of *Penthina sauciana*?—It has frequently been suggested that *Penthina Staintoniana* is only a northern form of one of the *Penthina*, but of which it has never been determined. The only species with which it can be associated is *sauciana*. On comparing it, the markings appear to be identical, and the only difference between the two species is in point of colour, *Staintoniana* being much paler than *sauciana*. To this difference I attach but little importance, considering the varied forms which are produced by altered conditions. Both species occur among *Vaccinium myrtillus*, which may be taken as additional evidence. Staudinger and Wocke, in their Catalogue, do not mention "*Staintoniana*." They give as the geographical distribution of *sauciana*—"Germany, Central and South Alps, Scandinavia, Lapland, Livonia, England. I have but little doubt that *Staintoniana* is only the "Scandinavian" form of this species.—ID.: October 3rd, 1884.

[*Penthina sauciana* differs from *Staintoniana* in the shape of the fore-wings, which, in *sauciana*, are broader with arched costa and truncate hind margin. The difference between these two species is much the same as that between *capræana* and *betuletana*. Nevertheless, the subject will bear further investigation.—C. G. BARRETT.]

Note on Laccobius minutus.—This seems to be a rather scarce species. Since Dr. Sharp's remarks on the genus (cf. Ent. Mo. Mag., xxi, 85), I have separated the specimens in my cabinet, and find the result is—*L. sinuatus*, Motsch., from Worthing; *L. alutaceus*, Th., from Deal; and *L. bipunctatus*, Th., from Folkestone. *L. minutus*, auct., I do not possess. Mr. Wood remarks (cf. Ent. Mo. Mag., xxi, 112) that he has only one example; and my friend, Mr. Newbery, also informs me he has all the species, but only one of *L. minutus*, and that specimen from an old collection, without any label.—C. G. HALL, 7, Beaconsfield Road, Deal: October 10th, 1884.

On setting Coleoptera.—So many of the carded specimens of beetles sent me by correspondents in various parts of the country are not in a sufficiently clean state of mounting to please my—perhaps, too fastidious—views of what a collection of beetles should look like, that I venture to call attention to a method of setting introduced by Mr. J. H. Smädley, of this city, and which has been adopted by all to whom we have shown it. All Coleopterists must have noticed that, no matter what care be employed, some beetles cannot be mounted with tragacanth without the card bearing traces of the setting needle, in the form of a rough, woolly-looking surface, showing as a dirty blotch round the legs and antennæ of the specimen. The method we adopt entirely does away with any unpleasant appearance. The specimens, after having been killed with boiling water, and drained on blotting paper, are set with *hot, thin glue* upon pieces of old stout card—stout, because thin card curls up as the glue contracts on drying. The specimens are set on this in the same manner as when tragacanth is employed, but with far less trouble, and in one-sixth of the time, for as each leg or antenna is drawn to its place it is retained

there—who has not lost his patience in setting (or trying to set) *Byrrhus* with tragacanth? and such genera as *Hister*, *Byrrhus*, *Coccinella*, *Parnus*, &c., can be made with no difficulty to show the palpi, antennæ, and legs as easily as a *Notiophilus*. Care must be taken not to have the glue too thick, or there is a liability of the limbs being detached, but a little practice will soon teach the requisite consistence. Another benefit to be derived from this plan is that among the “Staphs” there is no retraction of the segments of the abdomen, but once laid on the glue and pressed down with the needle, this portion of the insect retains its normal appearance. The cards, each containing a day’s captures, are marked with date and locality, and put away until time permits of their being re-mounted—a nice pastime for the long winter evenings. Then the cards are cut into pieces, each holding ten or a dozen specimens, these are dropped into boiling water, the specimens at once leave the glue and float on the surface, they are fished out quickly—so that no time for their relaxation occurs—on to blotting paper to drain, and mounted without any needle by placing them with a brush on a drop of tragacanth (to which a little acacia is best added) on the *whitest obtainable* card. In a short time the specimens may be cut out, ticketed with locality and date, if desired, and put away in a condition which no one can find fault with. It may be objected that the tarsi may become “beclogged,” and the specimens daubed with glue, during the setting, but even if this does take place, the momentary immersion in boiling water effectually removes all traces of this, and restores the specimens to their pristine beauty. The trouble of having to carry a small glue-kettle, and keeping the glue hot while away on a holiday, is far counter-balanced by the rapidity with which a day’s “bag” may be set, and the safety with which the glued cards of specimens will travel.—JOHN W. ELLIS, 101, Everton Road, Liverpool: *September 23rd, 1884.*

Reviews.

OUR INSECT ALLIES: by THEODORE WOOD. London: Society for Promoting Christian Knowledge. 1884, 8vo, pp. 238.

This is a pleasantly-written readable little book, containing much sounder information than is usual in works of the same class, and profusely illustrated. It is, we think, almost the author’s first attempt at book-making, and his production compares very favourably with many other works on popular entomology. The aim is to give an account of insects that aid us, either as parasites on other noxious species, or as scavengers that hasten the destruction of dead or decaying animal or vegetable matters. The exigencies of this position sometimes lead to a dilemma. For instance, if the author were to write a book on noxious insects he would certainly include gnats among them, and yet we here find them doing duty as “allies,” because their larvæ undoubtedly tend to purify stagnant water. We must point out to the author one serious error. At p. 160 he figures what he says is the larva of a Lace-wing fly (*Chrysopa*) devouring an *Aphis*. The figure represents, if anything, the larva of a *Syrphus* engaged in such an operation; and the error is unaccountable, because he largely quotes Mr. Buckton’s Monograph, and the latter author very correctly figures a Lace-wing larva on pl. lxxiv, fig. 2. There are some other blemishes or mis-statements; but we have no desire to be severely critical on a writer who has evidently tried to be correct, and, with a few exceptions, has succeeded.

THE BUTTERFLIES OF EUROPE, illustrated and described by HENRY CHARLES LANG, M.D., F.L.S. London: Reeve & Co. 1881—1884, pp. 396, super royal 8vo, with 77 chromo-lithographic plates.

We congratulate Dr. Lang on the conclusion of what was really a gigantic undertaking, and in having satisfactorily supplied what was a distinct *desideratum* to the numerous tourists with entomological proclivities who annually take their holiday on the Continent, and to others who, without being themselves travellers, collect European Butterflies. It is the only work of the kind in existence, and is likely to remain so. Not claiming to be a strictly scientific book, it can, nevertheless, scarcely fail to be consulted by all classes of entomologists, as a collective work. The arrangement followed is that of Staudinger, but the species *figured* are those that occur in Europe proper; the other palaearctic (and some nearctic) species are simply described. The descriptions are (with few exceptions) original, with notes on distribution and brief references to the larvæ (when known). More than 800 figures are given on the 77 chromo-lithographic plates; they are mostly successful, and in many cases infinitely superior to some hand-coloured figures, already published, of the same species; but they fail in giving a correct idea when *metallic* colours (blues and reds) are necessary, as in the *Lycanidæ*. Possibly there is a deficiency in what is commonly termed "readable matter." Type and paper are excellent, and the "printer's errors" not numerous (but occasionally unaccountable). Without reckoning "varieties" or "aberrations," the author enumerates 550 species of Butterflies as belonging to the "European (Palaearctic) Fauna," but we are not clear (from the Systematic List) as to the number of those now known as occurring in Europe proper; the additions from the Asiatic extension of the "Fauna" have been very numerous of late. The result of the labour of three years is now before those likely to be interested, who will, no doubt, judge for themselves as to how far it meets their requirements; we repeat that, in our opinion, a distinct *desideratum* has been supplied.

CATALOGUE OF THE LEPIDOPTERA OF THE BRISTOL DISTRICT. By ALFRED E. HUDD. From the Proceedings of the Bristol Naturalists' Society. 1878—1884.

This is another valuable addition to the several local lists that have appeared of late, and which, useful as they are at the present time, cannot fail to be of greater service, for comparative purposes, to future generations of local entomologists. The "District" is a large one, and includes portions of both Gloucestershire and Somersetshire. In the immediate vicinity of Bristol are the celebrated Leigh Woods (doomed we fear to early destruction), the home of *Drepana sicula*, and probably the only spot where the Lime (*Tilia parvifolia*) is indigenous in Britain. The total number of species listed is 1310 (as against 1341 in Yorkshire and 1246 in Norfolk), of which 55 are Butterflies, 73 *Nocturni*, 208 *Geometræ*, 25 *Drepanulæ* and *Pseudobombyces*, 215 *Noctua*, 57 *Pyrales* and *Deltoids*, 42 *Crambidæ*, 205 *Tortricæ*, 410 *Tineina*, and 20 *Pterophori*. There have been many energetic workers in the Micros in the District, who have helped to swell the list considerably. Here, as everywhere in this country, we have constantly the remark that Butterflies are becoming extinct or scarcer than formerly; but it is satisfactory to find that *Vanessa c-album* still occurs in profusion in some parts of the District. Mr. Hudd and his fellow-workers are to be congratulated on having produced an excellent local list.

THE *NITIDULIDÆ* OF GREAT BRITAIN.

BY REV. W. W. FOWLER, M.A., F.L.S.

(Continued from page 98.)

MICRUREULA, *Reitter*.

M. melanocephala, Er.—Thorax without separate side border, which gives the insect the appearance of a *Meligethes* rather than an *Epuræa*; its entirely different contour and certain differences in its mouth organs, especially the mandibles, seem to justify its separation as a distinct genus. The elytra are testaceous, thorax dark, antennæ and legs reddish; thorax gradually contracted from base to apex, much narrower in front than behind, base as wide as base of elytra; punctuation fine and close; last joint of antennæ as broad as preceding; legs rather short and strong.

Length, 1½ lin.

The colour of this species is variable; some specimens are entirely testaceous: this rather common variety is the *Nitidula affinis*, of Stephens; a much rarer variety, the *N. fusca*, of Heer, is entirely black or fuscous; of this I have only seen two specimens, which are in Mr. Wilkinson's collection, now in the possession of Mr. Mason.

This is rather a common species, and occurs on flowers. Shiere, Mickleham, Caterham, Amberley, St. Mary Cray, Purley Down, Gumley, Birch Wood, Forres; I have beaten it from wild cherry blossom in early spring, at Foremark, near Repton.

OMOSIPHORA, *Reitter*.

O. limbata, Er.—Distinguished from *Epuræa* by its long legs, the posterior of which are somewhat widely separated, and by its different contour. Oval, convex; thorax twice as broad as long, contracted at base, dilated in middle, as broad as elytra, with strong, broad border; testaceous or rufo-testaceous, with apical half of elytra and thorax (all but margins) dark; antennæ rather long, with last joint slightly narrower than the penultimate; punctuation rather strong.

Sometimes plentiful in fungi, but very local; Dartford, Walton-on-Thames, Shiere, Horsell, Burnham Beeches, Nocton, Repton, &c. I once beat a specimen from an old cabbage stump, which had been pulled up and left to decay. Erichson says it is taken at sap, and also under fallen leaves in sunny places in early spring.

Some of the distinctions above given for the different species of *Epuræa* and its allies are very slight, and are often mere matters of comparison; in dealing, however, with the genus, it is impossible in many cases to give very plain and tangible descriptions; the only way to obtain a knowledge of the species is by a careful comparison with types, as was said above; unfortunately, the rarer species are very difficult to procure as British, but foreign types are easily obtainable, and any one who wishes to work the genus would do well to furnish

himself with them, and so avoid the confusion that is constantly occurring: this also applies to other genera, like *Meligethes*; in many points the best authorities differ in their descriptions, and in some cases the differences they point out may be appreciable in one specimen of a series, but very difficult to make out in another; when once, however, the general distinctions have been grasped, the species as a rule are not hard to determine.

As regards the difference of size and colour, and the frequent occurrence of pale examples of the species that usually have dark markings, it must be remembered that *Epuræa* is a gregarious genus, and that a number of specimens are usually found together unassociated with other species; it is, therefore, very easy to determine them in such cases.

NITIDULA, *Fabricius*.

I. Thorax entirely black.

i. Elytra with yellow or reddish spots; thorax with anterior margin straight.

N. bipustulata, Linn.—Elytra of a dull black colour, with one well-defined reddish-yellow spot on each, placed a little behind the middle; antennæ entirely black, or dark red with black club; legs red; occasionally the margins of the thorax and elytra are reddish-brown, and sometimes the whole body-colour is brownish; the punctuation, although fine, is stronger than in our other species, but differs somewhat in the sexes, as does also the contour of the thorax, which is somewhat more narrowed in front in the female than in the males; the anterior margin of the thorax is straight, with hardly a trace of emargination. Length, $1\frac{1}{2}$ — $2\frac{1}{2}$ lin.

Universally common under dead birds and animals, old bones, &c.

N. quadripustulata, Fab. (*cornaria*, Schall.).—This insect, at first sight, in size and colouring resembles some species of *Epuræa*; the elytra are dark, with four irregular light spots often confluent and forming bands; antennæ red with dark club; legs red; punctuation of thorax fine but distinct; anterior margin of thorax quite straight. Length, 1 — $1\frac{1}{2}$ lin.

This is the smallest of our species, and is rather variable as regards colour: Stephens' *N. variata* is a pale variety; its habitat is the same as that of the preceding species, but it is local and by no means common—Hunstanton, Whitstable, Sheerness, Gravesend, Chatham, Darenth, Blackheath, Shirley, Weybridge.

ii. Elytra without spots; thorax distinctly emarginate.

N. rufipes, Linn. (*obscura*, Fab.).—Body entirely dull black, with very fine, almost invisible punctuation; antennæ red with black club; legs red; elytra with traces of striae. Length, $1\frac{1}{2}$ — $2\frac{1}{2}$ lin.

Habitat the same as the preceding; very local, and by no means a common species; Dr. Power has taken it in some numbers at Da-

renth, and it has been taken at Sheerness, Gravesend, Chatham, Esher, &c.; Stephens describes it as rather abundant, and gives the following localities: Norfolk, Suffolk, Devonshire, Netley, Glanvilles Wotton, and Swansea, so that it appears to be generally distributed; with the exception, however, of Dr. Power, no collector seems to have taken it in any numbers for a long time past.

There seems no good reason why the preference should be given to Fabricius' name for this species, as is now generally the case, as the insects in the Linnean collection standing under *Silpha rufipes* are our *Nitidula rufipes*; it is, however, true that the description given by Linnæus does not accord with them (*vide* Ent. Ann., 1867, 112), yet neither does it agree with *Meligethes rufipes*, which his insect is generally supposed to have been.

II. Thorax with margin broadly yellow.

N. flexuosa, Fabr.—Elytra black, with two very variable spots on each, one at base, and one in middle close to suture; the four spots are often confluent, and enclose a dark space round scutellum; antennæ rather long, yellowish, with dark club; legs yellow; punctuation extremely fine, almost invisible; thorax with anterior margin somewhat emarginate, broadest behind middle, and from thence contracted to base.

Length, $1\frac{1}{2}$ — $2\frac{1}{2}$ lin.

A very rare and doubtful species as British; Scarborough, Mr. Lawson; Northumberland, Mr. Bold; very probably imported with hides or bones; Mr. Bold himself considered his specimens taken near Newcastle-on-Tyne to have been not truly indigenous.

The species of the genus *Nitidula* are extremely variable in size, as may be seen from the lengths above given.

SORONIA, *Erichson*.

The species of this genus, and also of the genus *Omosita*, are readily distinguished from all the other *Nitidulidæ* by having the disc of the thorax distinctly impressed or wrinkled; some species (*e. g.*, *Omosiphora limbata*) have a distinct longitudinal furrow at the base, but their disc is smooth; slight traces of impressions are visible in many specimens of *Epuræa parvula*, and *Amphotis* and one or two species of *Rhizophagus* occasionally show small impressions or punctures, but these are apparently abnormal, and need hardly be taken into account when compared with the sculpture of the thorax of the above-named genera; our two species of *Soronia* resemble each other very closely in colour, having the thorax and elytra variegated with black or dark brown and yellowish or reddish spots; the elytra have four or five raised lines on each.

EXCHANGE.

Duplicates: *Bembidium palquetratum*. *Desiderata*: many species of *Geophaga*.—R. WILSON, 40, Downing Street, Liverpool.

Duplicates: *Pterostichus oblongopunctatus*, *Calosoma inquisitor*, *Quedius lateralis*, *Pedonotus pusilla*, *Agathidium seminulum*, *Corylus histaroides*, *Ataneria munda*, *Aplodius foetidus*, *A. conspurcatus*, *A. depressus*, *Elater pectoratus*, *Chrysomela varians*, *Pygidius maroides*, *Heliophanes gibbus*. *Desiderata*: numerous; lists exchanged.—A. E. HODGSON, Llantilio Crossenny, Aberparanwy.

Duplicates: a few *Phocophorus hemipterus*, also *Athous difformis* and *Claviger foveolatus*. *Desiderata*: other rare and local *Coleoptera*.—J. H. A. JENNS, 4, East Street, Lwisa.

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FOR SALE.—MY LAST LIST OF EUROPEAN BIRD-EGGS

(No. 44), for 1884—85 is just published. Also my last List of EUROPEAN and EXOTIC COLEOPTERA (No. 45), for 1884—85, wherein are MANY FINE and RARE SPECIES at greatly reduced prices. Both Lists will be sent on application, gratis and post free. My new List of EUROPEAN LEPIDOPTERA, for 1884—85, will be published in November.—A. KRICHELDORFF, Naturalist, 135 Ouseway, Berlin, S.

S. punctatissima, Ill.—Usually much larger than the following species, but occasionally specimens are found that are not larger than a moderate sized *S. grisea*. In Dr. Power's collection there are several of these small specimens taken by him among a large number of the type form. As a rule, the species may be separated by size, but apart from this, *S. punctatissima* is a broader and more convex insect with closer punctuation, and with the sides of the thorax more parallel; the margins of the thorax and elytra are also somewhat broader and more distinct.

Length, $1\frac{1}{2}$ — $2\frac{1}{2}$ lin.

Usually found in or near burrows of *Cossus ligniperda*: Shirley and Esher, in birch, Dr. Power; Dunham Park, Manchester, in oaks and alders, Mr. Chappell; Shiere, under stones and by sweeping, Dr. Capron; Isle of Wight, Darenth, Chatham, Addington, &c.

S. grisea, Linn.—Narrower in proportion and less convex than the preceding; also rather less closely punctured; it is also usually of a lighter colour.

Length, $1\frac{1}{2}$ — $2\frac{1}{2}$ lin.

A widely distributed and rather common species; not so often associated with *Cossus* as the preceding: Notting Hill, in willows not infested by *Cossus*, Dr. Power; Stretford, Manchester, under bark of old apple trees, Mr. Reston; Prestwich, under bark of alders near *Cossus* burrows, Mr. Chappell; at sap of *Cossus*-infected trees, common, Mr. Champion; I have beaten it from hawthorn blossoms near the banks of the Trent at Repton, and in Bretby Wood near the same place, and have also taken it in flood refuse.

The larva of this insect is figured in the first volume of the Transactions of the Linnean Society by Mr. William Curtis, and again in Westwood's Classification of Insects, vol. i, p. 142; it inhabits willow trees and feeds on frass; the pupæ, according to Westwood, are found at the foot of the trees, beneath the surface, amongst the moist earth and *débris* there collected.

AMPHOTIS, Erichson.

This genus may be at once distinguished, apart from differences in the mouth-organs, by the very broad and smooth margins of the thorax and elytra, and the very greatly enlarged first joint of the antennæ, which, when viewed from above, gives the forehead the appearance of being strongly lobed; the second joint is inserted beneath the lobe formed by the first, which slightly overlaps it, and not at the end of the first joint, as is the case with *Omosita* and other genera, which have the first joint thickened.

A. marginata, Er.—Thorax and head ferruginous: elytra dark, with some lighter markings, and with five distinct raised longitudinal lines on each; margins of thorax and elytra very broad and smooth, of a uniform red colour; punctuation of thorax fine and close, of elytra stronger and more diffuse.

Length, 2— $2\frac{1}{2}$ lin.

Rare; in chinks and crevices of beech and other trees near the runs of *Formica fuliginosa*: Birch Wood, Tilgate, Coombe Wood, Mickleham, Horsell, Maidstone, &c.

OMOSITA, *Erichson*.

1. Length, $1\frac{1}{4}$ lines; thorax ferruginous, elytra strongly margined.

O. depressa, Linn.—Entirely of a rust-red colour, except the head, scutellum, centre of thorax, and a few scattered spots on elytra, which are darker; thorax with two impressions on disc behind middle, and a strong longitudinal furrow on each side; posterior margin very distinctly bisinuate; elytra very finely, almost invisibly, punctured, with strong margins.

A local species, common in the north of England and in Scotland; it is usually found under old bones; Aviemore, Braemar, Dumfries, North Derbyshire, Llangollen (under stones), Shiere, &c.; Stephens gives Bottisham, Netley, and Glanvilles Wootton, as localities.

2. Length, $1\frac{1}{4}$ lines; thorax dark, with margins somewhat lighter; elytra very slightly margined.

O. colon, Linn.—This and the next species are at once distinguished from the preceding by their much smaller size, different colouring, less close punctuation, more oblong form, and much narrower margins of elytra; in fact, *O. depressa* might for many reasons be made a separate genus. *O. colon* may be separated from *O. discoidea* by its colour, which is dark, with the margins of the thorax somewhat lighter; the elytra have each a rather small spot behind middle, reaching to suture, and a few other light spots towards base; the thorax is strongly rounded and contracted in front, so that the anterior margin is considerably narrower than the posterior, and the base shows very slight traces of sinuation. Length, $1-1\frac{1}{4}$ lin.

Very common under old bones, and generally distributed.

O. discoidea, Fabr.—Distinguished from the preceding by having the thorax not much contracted in front, so that the anterior margin is nearly as broad as the posterior, and by the elytra having a common light yellowish spot reaching from base to beyond middle, and from suture nearly to side margin: the posterior margin of the thorax shows hardly a trace of sinuation.

Length, $1-1\frac{1}{4}$ lin.

Very common under old bones, and generally distributed.

PRIA, *Kirby*.

This genus at first sight closely resembles *Meligethes*, but is distinguished by the oblong club of its antennæ, by the thorax having a lateral stria close to margin, and by the simple front tibiæ.

P. dulcamara, Ill.—Rather smaller than *Meligethes aeneus*, of a dark olive-testaceous colour, with suture of elytra and under-side darker; punctuation of thorax fine, of elytra almost invisible; legs yellow; anterior tibiæ simple; under a high power slight traces of teeth are visible, and the posterior tibiæ are seen to be clothed with very short white hairs on their margins; the antennæ are rather longer in the males than in the females, and the eighth joint in the former sex is enlarged laterally, so that the club appears to be four-jointed in the males, and three-jointed

in the females. Stephens, deceived by this, considered them to belong to separate genera, the female being his *Meligethes dulcamara*, and the male his *Pria truncatella*.
Length, 1 lin.

Local, but widely distributed, on flowers of *Solanum dulcamara*.

THALYCRA, *Erichson*.

T. sericea, Sturm.—Bright rust-red, shining, ovate; thorax strongly punctured; elytra strongly punctured at base, more feebly at apex; elytra and thorax closely fringed with short white hairs; antennæ with first joint enlarged, almost semi-circular, club round and very compact; anterior tibiæ simple, posterior pairs armed with spines on the exterior side; occasionally the elytra are of a darker colour.
Length, 1½—2 lin.

Widely distributed, but rare; at sap of infected *Cossus* trees, and occasionally by evening sweeping; Birch Wood, Shirley, Ripley, Esher, Surbiton, Mickleham, Loughton, Balcombe (Sussex), Tilgate, Bromley, Forres; it is the same as *Strongylus fervidus*, Steph., which, according to Stephens, inhabits fungi; Erichson says that the probable habitat of this species is under-ground, as the structure of the legs seems to indicate, but that on hot summer evenings it comes out on grass and low vegetation.

POCADIUS, *Erichson*.

This genus has a sort of superficial resemblance to *Thalycra* and *Cychramus*, but may be distinguished from the first by the regular rows of punctures on the elytra, which are separated by regular rows of yellow hairs, and from the latter by the compact round club of the antennæ (the club in *Cychramus* being elongate), and the fact that the anterior tibiæ are produced into a strong point at apex.

P. ferrugineus, Fabr.—Oval, convex, shining, of a reddish-brown colour, apex of elytra sometimes darker; antennæ very short, light red, with dark club, which is very compact; thorax very short in comparison with elytra, with narrow, though distinct, margins, rather diffusely and obscurely punctured; elytra punctured as above; legs light red, with all the tibiæ produced into a point at apex.
Length, 1½—2 lin.

Local, but widely distributed, in fungi, especially *Lycoperdons*.

(To be continued).

Cis bilamellatus, Wood.—In the description of this insect on p. 180 of this volume, owing to a mistake, "*pube parca*," which I wrote, was printed "*pube paucâ*," and "*utrumque*" was omitted in line 11, which should read "*utrumque pube flavâ ordinibus dispositâ vestitum*," &c. I had nothing to do with the description in English, which I did not see until I received the Magazine, but I may perhaps be allowed to point out that in lines 8 and 10 for "emarginate" we ought to read "marginated."—Id.: November 13th, 1884.

REVISION OF THE BRITISH SPECIES OF *SPHECODES*, LATR.
(INCLUDING NINE ADDITIONAL).

BY EDWARD SAUNDERS, F.L.S.

In my Synopsis of the British Hymenoptera Aculeata (Trans. Ent. Soc. Lond., 1882, pp. 195—199) I described the few British species of this genus then known to me, enumerating six in all. In the same year Von Hagens, of Düsseldorf, published the last of his several important papers on *Sphcodes*, in which he describes all the German species known to him, and gives figures of the genital armatures of the males, and it is from this paper, published in the Deutsche Entom. Zeitschrift, 26 Jahrg., 1882, 2^{tes} Heft, pp. 209—228, pl. 6 and 7, and from specimens very kindly sent to me by v. Hagens himself, that I have been able to identify our species with his.

There is no doubt that the genus is a very difficult one to work out, and that the species are superficially exceedingly alike; but, at the same time, the characters exhibited by the genital armatures of the males are most pronounced, and it is only necessary for collectors to extract these with a fine needle (which is very easily done when the insects are still moist), to enable them to name their captures with ease and certainty. Apart from these characters, the antennæ and alar hooks and puncturation afford peculiarities in most cases by which the species may be recognised; but in some (as far as my examinations have gone) it is positively necessary to extract the armature to refer a specimen for certain to its proper species. In the females it is almost equally necessary to extract the terminal abdominal segment, which is wont to get hidden under the 5th, as its dorsal valve affords characters which are often most useful; other characters appear in the number of alar hooks, the colour of the tibial spines, and in the puncturation of the mesothorax, as well as in the sculpture of the metapleuræ.

The really great difficulty is to assign the right females to the various males, as the sexes are only to be found together for about a month (in August), and even then, as several species sometimes colonize in the same bank, the difficulty is scarcely lessened. The group in which this difficulty has not yet been satisfactorily surmounted is that which was formerly known as *ephippium*, Kirby, but which now includes four British and no less than nine German species. Here the males are easily distinguishable, but the females are very much alike; v. Hagens has distinguished eight forms, but it still remains to be shown for certain which are referable to which of his nine males,

although he makes suggestions which seem, as far as I can judge, to assign them correctly. Any one studying this genus ought certainly to procure his papers, as there is yet room for hope that more of the European species may turn up in this country.

I have pleasure in thanking the Rev. E. N. Bloomfield, and Messrs. Bridgman, Harwood, Marquand, Parfitt, Perkins, and Service, for the loan of their specimens, and for several rarities which they have kindly given me.

TABLE OF SPECIES.

- (8) 1. ♂ & ♀. Hooks of posterior-wings 7—10, large species.
- (7) 2. { ♂. Posterior tibiae not spinose.
♀. Mesothorax very shining, puncturation large and remote.
- (4) 3. ♂. Basal pubescent bands of the antennal joints reaching to about one-third of the length of each joint, and widened at the sides.
♀. Glabrous centre of apical dorsal valve very narrow, almost linear...
gibbus.
- (3) 4. ♂. Basal pubescent bands of antennae very narrow, not widened at the sides.
♀. Glabrous centre of apical dorsal valve more or less wide.
- (6) 5. ♂. Lacinia of armature not bifid, 2nd sub-marginal cell very narrow.
♀. Sides of metathorax reticulated, apical dorsal valve rather narrow, spines of tibiae black.....*reticulatus.*
- (5) 6. ♂. Lacinia of armature bifid at the apex, 2nd sub-marginal cell not very narrow.
♀. Vertex of head sub-quadrate, sides of metathorax strigose, apical dorsal valve wide and flat, spines of posterior tibiae pale ... *subquadatus.*
- (2) 7. ♂. Posterior tibiae armed with pale spines along their external margin, as in the ♀.
♀. Thorax dull, closely and rugosely punctured*spinulosus.*
- (1) 8. ♂ & ♀. Alar hooks 5—6, large or small species.
- (18) 9. ♂. Stipites of armature without a wide longitudinal groove.
♀. Dorsal apical valve wide, flat and dull, or with the mandibles not toothed, or very small (*niger*) with mandibles toothed, but with the 2nd segment of abdomen more or less suffused with black, and the 3rd segment not foveated at the sides.
- (15) 10. ♂. Stipites not strigose, finely reticulated or rugose or nearly smooth.
♀. Mesothorax finely punctured, apical dorsal valve not dull and punctured.
- (14) 11. Second sub-marginal cell wide in both sexes.
♂. Genital armature longer than wide.
♀. Mandibles not toothed.
- (13) 12. ♂. Lacinia of armature not fringed with hairs at the apex, its membrane produced along the inner edge of the stipes.
♀. Larger and darker, apical dorsal valve narrowly rounded at the apex, and with an impressed line parallel to the margin *puncticeps.*

- (12) 13. ♂. Lacinia fringed with hairs, its membrane not produced along the edge of the stipes, abdomen entirely black or piceous.
 ♀. Smaller and lighter, apical dorsal valve widely rounded at the apex, its margins reflexed *longulus*.
- (11) 14. Second sub-marginal cell narrow in both sexes.
 ♂. Genital armature nearly twice as broad as long.
 ♀. Mandibles toothed *niger*.
- (10) 15. ♂. Stipites distinctly strigose.
 ♀. Mesothorax closely and rather largely punctured, apical dorsal valve wide, flat and punctured.
- (17) 16. Larger. ♂. Abdomen elongate, armature with the lacinia flat and sub-membranous, clothed with long hairs at the apex.
 ♀. Dorsal apical valve slightly reflexed at the edges *pilifrons*.
- (16) 17. Smaller. ♂. Abdomen short, armature with the lacinia bifid at the apex.
 ♀. Apical dorsal valve distinctly margined *similis*.
- (9) 18. ♂. Stipites each with a wide longitudinal groove.
 ♀. Mandibles toothed, apical dorsal valve shining, or with the 3rd abdominal segment with a black fovea on each side.
- (22) 19. ♂. Basal segment of abdomen entirely red, or with three small black spots at its extreme base.
 ♀. Third abdominal segment not foveated at the sides.
- (21) 20. ♂. Larger, with the base of the abdomen entirely red ... *ferruginatus*.
- (20) 21. ♂. Smaller, with the basal segment of the abdomen more or less spotted at the extreme base *hyalinatus*.
- (19) 22. ♂. Basal segment of the abdomen black.
 ♀. Third segment of the abdomen with a black fovea on each side.
- (26) 23. ♂. Antennæ with a grey pubescent basal band on each joint.
- (25) 24. ♂. Antennæ entirely black *variegatus*.
- (24) 25. ♂. Antennæ more or less rufescent in front *divirus*.
- (23) 26. ♂. Pubescence of antennal joints extending almost to the apex of each.
- (28) 27. ♂. With the thickened portion of the lacinia produced at the apex inwardly and considerably widened *dimidiatus*.
- (27) 28. ♂. Apex of lacinia not widely dilated on its inner margin *affinis*.

1. *gibbus*, Linn., Syst. Nat., ed. x, vol. i, p. 571. E. Saund., Trans. Ent. Soc. Lond., 1882, p. 196, pl. viii, f. 3. v. Hag., Deutsche Ent. Zeit., xxvi, 1883, pl. vi, f. 4.

Black, base of abdomen more or less red. A bright shining species, the ♂ with long antennæ, the 3rd joint of the flagellum several times longer than the short transverse 2nd joint; mesothorax largely and rugosely punctured; abdomen rather strongly punctured; wings slightly dusky; 2nd sub-marginal cell not quite so wide at the base as long; genital armature with each lacinia produced into two elongate processes, clothed with long hairs, the upper one the longest.

♀. Mesothorax very shining, largely and remotely punctured; metathorax at

the sides rugosely strigose; wings darker than in any of the other species; 2nd sub-marginal cell shaped much as in the ♂; abdomen shining, indistinctly punctured; apical dorsal valve with a very narrow glabrous centre; spines along the external margin of the tibiæ black.

Length, 8—10 mm.

A common species, I believe. I have taken it commonly at Chobham, and received it from Norwich (J. B. Bridgman), Colchester (W. H. Harwood), Gloucestershire (V. R. Perkins), Guestling, near Hastings (Rev. E. N. Bloomfield), Exeter (E. Parfitt), Penzance (E. D. Marquand).

2. *reticulatus*, Thoms., Opusc. Ent., 98, 3; Hym. Scand., ii, p. 155.

v. Hag., Deutsche Ent. Zeit., xxvi, 1882, pl. vi, f. 5.

Very like the preceding, but rather smaller, and the puncturation of the thorax in both sexes rather less coarse. ♂ with the antennæ neither quite so long nor so thick as in *gibbus*, each joint with the basal pubescent band much narrower; anterior-wings with the 2nd sub-marginal cell very narrow, its sides sub-parallel, almost twice as long as wide; abdomen shining, less strongly punctured than in *gibbus*; the armature quite differently formed: the lacinia being produced into a simple point, with a sub-membranous wing along its inner margin.

♀ differs from *gibbus* in its narrow 2nd sub-marginal cell, its less smoky wings, the reticulated (not strigose) sides of the metathorax, the wider sub-carinated dorsal valve of the abdomen, and in the much more finely punctured, less shining, and grey pubescent 4th segment; the black of the apex of the abdomen also does not extend on to the apex of the 3rd segment, as is usually the case in *gibbus*.

Length, 7—9 mm.

I took a few males in August this year at Chobham, flying over a sandy bank, and find a ♀ mixed with *subquadratus* taken at Chobham in 1873. I think it must be local, as I have not received it from any correspondent.

3. *subquadratus*, Sm., Zool., iii, p. 1014, f. 5. E. Saund., Trans. Ent.

Soc., 1882, p. 197, pl. viii, f. 2. v. Hag., Deutsche Ent. Zeit., xxvi, 1882, pl. vi, f. 6.

Just like the preceding in colour, but distinguished in both sexes by its rather larger size, and much wider 2nd sub-marginal cell; in the ♂ also by the bifid lacinia and very different shape of the armature; and in the ♀ by the incrassate vertex, the strigose metapleuræ, the wide flat dorsal valve, and the pale tibial spines.

Length, 8—10 mm.

A common species and widely distributed. Chobham; Norwich (J. B. Bridgman), Hastings (Rev. E. N. Bloomfield), Penzance (E. D. Marquand), Lundy Isle, nearly black ♂ (F. Smith), Gloucestershire (V. R. Perkins), Dumfries (R. Service), Colchester (W. H. Harwood), Hampstead (T. R. Billups).

(To be concluded in our next).

ON A REMARKABLE NEW GENUS OF *CUCUJIDÆ* FROM BRAZIL.

BY A. SIDNEY OLLIFF.

ACIPHUS, *gen. nov.*

Body elongate, much depressed. Head moderately large, broadly transverse. Eyes small, elongate, situated just behind the base of the antennæ, very finely faceted and not prominent. Antennæ, 11-jointed; the basal joint very long, slender, widening out into a flattened club at the extremity, the second joint very short, but distinctly longer than broad: the third about twice as long as the second; the fourth to tenth nearly equal in length; the apical slightly longer than the preceding. Mandibles prominent, incurved, moderately stout and not grooved. Prothorax considerably longer than the head; the sides oblique, with a feeble emargination on each side just behind the middle. Scutellum rather long, the sides nearly parallel, pointed behind. Elytra only extending to just before the base of the second abdominal segment; humeral angles somewhat prominent; outer apical angles rounded. Abdomen with the terminal segment rounded behind. Legs rather short; femora very stout; the four anterior tarsi 5-jointed, the first joint slightly elongate, the second and third somewhat shorter, the fourth small, the fifth about as long as the three basal joints together; posterior tarsi 4-jointed, the basal joint as long as the two succeeding ones together; claws with a slight enlargement near the base.

The genus characterized above is allied to *Diagrypnodes*, Waterh. (Trans. Ent. Soc. Lond., 1876, p. 13), but differs in having the head transverse, the mandibles simple instead of grooved, and in the form of the scutellum. The basal joint of the antennæ is longer, and the eyes are situated nearer the bases of those organs.

ACIPHUS SINGULARIS, *sp. n.*

Elongate, very strongly depressed, pale reddish-testaceous, shining; the disc of the head except near the base, mandibles, apex of each elytron and the knees pitchy-black. Head much broader than long, narrowed in front of the eyes, extremely finely punctured; the sides nearly parallel; the posterior margin with a slight sinuation on each side of the middle. Antennæ slender, filiform, reaching beyond the apex of the elytra. Prothorax much longer than the head, considerably broader in front than behind, somewhat concave, with scarcely any trace of punctuation; anterior angles rounded; the sides oblique, with a feeble emargination just behind the middle; posterior angles obtuse; the median line indistinct. Scutellum extremely finely punctured. Elytra at the base slightly narrower than the head, widening posteriorly, extremely finely and very sparingly punctured; the sides arcuately rounded behind: each elytron with a very feebly impressed line extending from the shoulder to just before the inner apical angle. Abdomen pale testaceous; all the segments except the first with a moderately large dusky spot on each side of the middle. Length, 6 mm.; greatest width, 1½ mm.

Rio Janeiro (*Squire*). Type in the collection of Mr. E. W. Janson.

This curious species is allied to *Diagrypnodes Wakefieldii*, Waterh. (*l. c.*), described from New Zealand.

London: November 18th, 1884.

ON A SMALL COLLECTION OF *TRICHOPTERA* FROM UNST,
NORTH SHETLAND.

BY R. McLACHLAN, F.R.S., &c.

At p. 91 of this vol. I published a short note on four species of *Trichoptera* captured in Unst by Mr. C. A. Briggs. A somewhat larger collection, comprising twelve species, made by Mr. E. P. Roper Curzon, in August of this year, has just been presented to me by Mr. Meek. It merits a longer notice, and more especially as there is one insect of extreme interest. It may be well to mention that the northernmost point of Unst lies in nearly 61° N. latitude.

The following are the species:—

PHRYGANEA VARIA, F.—One ♂, small, and of a peculiar tint.

LIMNOPHILUS AURICULA, C.—Two ♂, *excessively* small, the expanse being only 12½ mm., almost one-third less than the smallest example I had previously seen of this species.

LIMNOPHILUS GRISEUS, L.—Two ♀, both dark, and one *very* small, expanse only 13½ mm.; the other expands to 20 mm., which would be rather small for an ordinary ♂, and the ♀ in this species is usually much the larger.

LIMNOPHILUS SPARSUS, C.—One ♂, two ♀, rather small (expanse, about 19 mm.), and all of a peculiar variety, with nearly unicolorous smoky-grey anterior-wings and ill-defined pterostigmatic mark. I have found such a condition at great altitudes (about 6000 ft.) in the Alps, and have seen it from Finland. It reminds one forcibly of the British type-form of *Asynarchus caenosus*, C., only with narrower fore-wings. The species is notoriously variable, and the main point in these Unst examples is their comparative constancy.

STENOPHYLAX LATIPENNIS, C.—Three ♂, two ♀, small, and very smoky in colour; similar to those taken by Mr. Briggs. *S. latipennis* and *S. stellatus*, C., are very closely allied, but distinct, unless connecting links in the slight structural differences be proved to exist. Perhaps there may be slight doubt concerning these Shetland examples. The superior appendages have retracted in drying, so as to be invisible.

STENOPHYLAX CONCENTRICUS, Zett.—Three ♀, not larger than an ordinary small ♂, and with the anterior-wings very decidedly tinged with brown.

MESOPHYLAX IMPUNCTATUS, McLach., *var. ZETLANDICUS*.

Apart from its pigmy size, it differs from the type-form as follows:—Head and

thorax blackish-fuscous above (the usual warts and lines obscure reddish). Abdomen fuscescent above. Spines of the legs darker, brownish. Anterior-wings smoky-grey, the membrane rather thickly sprinkled with whitish-grey dots: neuration blackish-fuscous. Posterior-wings with a greyish tinge: neuration fuscescent.

In the ♂ the anal structure is apparently identical with that of the type-form, but the colour is darker.

Length of body, ♂, 9 mm. Expanse of wings, ♂, 23 mm.

It was with astonishment that I realized the connection (and probable specific identity) of the single specimen with *M. impunctatus*. The latter was separated by me from the decidedly South European (and cave-frequenting) *M. aspersus*, Rambur, in the 1st Additional Supplement (published this year) to my "Revision." The typical *M. impunctatus* is also generally of South or Central European distribution. But an additional interest attaches to this Unst insect, because a little more than a year ago, Mr. J. J. King recorded (Ent. Mo. Mag., xx, p. 19) an example of the type-form taken in Dumfriesshire by Mr. Service, and I appended a note thereto, explaining that I had not seen it from farther north than Bavaria, and making, a probably lame, attempt to account for its presence in Scotland. The smallest ♂ of the type-form that I had previously seen expands to 33 mm., this ♂ to only 23 mm. (thus in exaggerated correspondence with the other *Trichoptera* of Unst, and proving its native origin); the general colour is so much darker that the appearance is quite changed, and were it not for the almost unerring characters afforded by the anal parts, the close (and, as I believe, specific) relationship of the Unst insect to *M. impunctatus* could hardly have been suspected. More materials will, I have no doubt, confirm this, but the form is distinctly worthy a varietal name.

A somewhat parallel case exists with regard to *M. aspersus*. I have described a form of this (*var. canariensis*) taken by the Rev. A. E. Eaton at a great elevation on Grand Canary, which also differs from the type-form of that species by its very small size (expanse, 22—25 mm.), but the discrepancy is less, and the general appearance is but little changed.

Probably many discoveries in the way of *Trichoptera* have yet to be made in this country, but none of them can exceed the present in interest.

HALESUS RADIATUS, C.—One ♂, rather small, but not differing from more southern examples in the character of its markings.

DRUSUS ANNULATUS, Steph.—One ♀, rather small, but presenting special features.

ECETIS OCHRACEA, C.—One example (abdomen wanting), whiter than (not so ochraceous as) the southern form, but resembling what appears to be the usual condition in Scotland.

PLECTROCNEMIA CONSPERSA, C.—One ♂, small, and *very* dark.

POLYCENTROPUS FLAVO-MACULATUS, Pict. ?.—One ♀.

Thus, small size and dark colour are the dominant features of the Shetland *Trichoptera*, just as occurs in those most remarkable *Lepidoptera* from the same quarter that have excited so much interest with British Lepidopterists, and which are proving equally interesting on the continent.

Two ♀ examples of *Hydroptila* from the Island of Hoy are not determinable.

Lewisham, London :

November 8th, 1884.

ON THE *SCOPELODES UNICOLOR* OF WESTWOOD AND WALKER.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The genus *Scopelodes* (a group of *Limacodid* moths) was characterized by Westwood on page 222 of the fifth volume of Duncan's "Naturalists' Library;" the typical species, *S. unicolor*, being described on the following page, and figured on plate xxviii (fig. 2).

S. unicolor, of Westwood, is described as follows:—"The colour of the entire moth is buff, the wings having a silky gloss, and the palpi have a pale ring near the apex; the back of the abdomen is rather more fulvous, and marked with short black bands. It is an inhabitant of Java, and is in the collection of the Rev. F. W. Hope. The expansion of the wings is two inches and three-quarters."

It is perfectly clear that Walker never referred either to description or figure of this species; even his reference, "Dunc. Nat., xxxvii, 222," proves so much, since the volume is not quoted and the number of the plate (which Walker evidently believed to be that of the volume), is not quoted correctly: but it is also evident that, if the description had been looked at, the locality given by Westwood, "Java," would have had some weight in Walker's identification of the species, and the figure (which, by the way, is only misleading, as it is coloured utterly unlike any *Scopelodes* that ever existed, with a combination of burnt-sienna and brick-red), might have made him unwilling to give the name *S. palpalis* to the common species of Java.

Walker's *Scopelodes unicolor* was evidently believed to be Westwood's species, from the fact that it is nearly unicolorous: it occurs at Silhet and Moulmein; the var. γ of Walker's description, from Ceylon, being a much rubbed example of Moore's *S. aurogrisea*, and in place of Walker's "Fore-wings with a broad, diffuse, slightly paler band," it should have been noted that the "Fore-wings are much rubbed in the centre." I propose to call *S. unicolor*, of Walker, by the name of *S. testacea*; as it is distinct from *S. unicolor*, of Westwood, which we have from Java, and which also is quite distinct from the much commoner *S. palpalis*.

SCOPELODES TESTACEA, n. sp.

Scopelodes unicolor, Walker (neo Westwood), Lep. Het., 5, p. 1104. n. 1 (1855).

Primaries and thorax shining brownish-testaceous; secondaries pale shining golden-ochreous, with white-tipped fringe; palpi greyish, with a white sub-apical band and black tip; abdomen deep ochreous, with two or three dorsal dots and the anal segment black: expanse of wings, 72 mm.

Silhet and Moulmein. Type, B. M.

S. unicolor is represented in the Museum by two specimens, rather smaller than that from which Westwood's description was taken: the primaries and body are of a shining golden-testaceous colour, and the secondaries whitish-testaceous; the fringe of all the wings white; the palpi with a white band near the tips; the abdomen, as described by Westwood, has a dorsal series of black tufts or "short bands," and the tarsi are tipped with black; *S. palpalis*, on the other hand, has shining, foxy-red, primaries and thorax, and deep ochreous secondaries and abdomen; the fringes of the wings being tipped with silvery-white; the abdomen with dorsal bars and anal segment black.

British Museum:

November, 1884.

DESCRIPTION OF A NEW SPECIES OF *COCYTIA*.

BY HERBERT DRUCE, F.L.S., F.R.G.S., &c.

COCYTIA RIBBÆI, sp. n.

Primaries and secondaries bluish-hyaline; the black external borders of the male narrow, as in *C. chlorosoma*; in the female the borders are much broader, the intermediate streaks shorter than in *C. Durvillei*. The primaries without the sub-basal orange patch common to all the other described species. The thorax and abdomen light bluish metallic-green, except the anal segments, which are black. On the under-side the orange-coloured patch is present, as in *C. Durvillei*.

Expanse, ♂, 8 in.; ♀, 3½ in.

Hab. : Aru Islands. Mus. Druce.

This very distinct and beautiful species is at once distinguished from all those hitherto described by the entire absence of the sub-basal orange-coloured spots on the primaries, and by its more brilliantly coloured abdomen. The primaries are also somewhat narrower and shorter. I have named this fine insect after its captor, Herr C. Ribbé, who obtained it this year in the Aru Islands.

On examining the fine series of specimens of *O. Durvillei* in my own collection, I find the orange sub-basal patch very variable: in some specimens it is quite small and round, in others large and oval. The black external borders also vary considerably in width.

The Beeches, Circus Road, N.W. :
November, 1884.

Observations on Lepidoptera near Reading.—

Argynnis Paphia v. *Valezina*.—I saw two specimens of this variety in a wood at Streatly, near Reading, in July, 1876, and secured one of them, which is now in the collection of the Reading Museum.

Argynnis Selene.—I took a specimen some years ago in Odiham Wood much suffused with smoky-black, all the markings being much larger and blacker than usual, and those across the centre of the wing forming a band of large square blotches.

Melitæa Artemis.—Varieties of this species also occur near Odiham, some being much suffused with black and with a broad blackish fascia, others with a moderately broad yellowish fascia, and once a specimen was found with the under-side of the hind-wings nearly devoid of markings.

Satyrus Janira.—A female specimen was taken a few years ago at Pangbourn in which the whole of the usually dark borders of the wings are white, the only colouring being the usual tawny colour of the middle of the wings. This specimen is also in the Reading Museum.

Satyrus Hyperanthus.—The variety of this species in which the “ringlets” are absent from the under-side is occasionally found in this district.

Sphinx ligustri.—Of this species I have reared two specimens in which the pink colour of the hind-wings and of the abdomen is replaced by yellowish-white. When they emerged these portions were of a pale lemon colour. These specimens are also in the Reading Museum.

Liparis dispar.—In August, 1870, at Odiham, I was in the wood one day, and had been running after *Vanessa polychloros* until, being tired out, I flung myself down to rest in a wood-ride. As I lay there a moth flew across the ride which, jumping up, I secured. To my surprise it was a male gipsy moth in fairly good condition. This specimen is also in the Museum here. Its colour is much greyer than that of the males of the domesticated stock of this species.

Lithosia griseola var. *stramineola*.—This variety is found in fair numbers in -

wild marshy tract a few miles from here. It is not, however, to be found in other neighbouring places in which the typical *griseola* is common.

Spilosema fuliginosa.—Common in this district. On one occasion I found a larva feeding on a leaf of *Listera ovata*, and pursuing the search found a considerable number on this unlikely plant.

Amphidasys betularia.—This species is common here, always of the usual peppered form, but one specimen taken several years ago is very coarsely peppered, being, in fact, almost blotched with large black dots. It, however, does not resemble the dark Lancashire varieties.

Strenia clathrata.—Several specimens have occurred in one of our meadows in which the wings are suffused with black, with only a few white spots towards the margins.

Anticlea sinuata.—This species occurs here occasionally on the chalk.

Anticlea rubidata.—Rather plentiful about *Clematis vitalba* with *Melanthia procellata* and *Phibalapteryx tersata*. *Ph. vitalbata* is much less frequently found, although double brooded.

Phibalapteryx lignata.—Very common in marshy places and low meadows. I have reared it from the egg, the larva feeding especially on a common *Galium* growing by ditch sides, but being apparently willing to eat any species of *Galium*.

Cidaria corylata.—I have found at Odiham one specimen of the curious bandless form of this species, usually found in the north.

Xylophasia sublustria.—Common here at sugar.

Xylophasia scolopacina.—I have taken one specimen in a small wood in this neighbourhood. It was at rest on the trunk of a fir tree.

Agrotis cinerea.—One specimen occurred a few years ago on a gas lamp in this town.

Agrotis agathina.—This also has occurred singly, and, contrary to its usual habits, at sugar. This was on September 11th, 1876.

Noctua rhomboidea.—This species may always be depended upon at the end of July and beginning of August, at sugar in some of our woods.

Dasyampa rubiginea.—This species has also occurred here once, at sugar.

Xanthia aurago.—I never saw, or expected to see, such a sight as met my eyes when I commenced to examine my sugar on the night of September 22nd, 1876. *Aurago* actually covered every patch of sugar on some of the trees. I never saw any moth, not even *N. xanthographa*, in such swarms. I secured as many as I could possibly find room for, picking out the finest specimens and most beautiful varieties, but causing no apparent diminution in their numbers. Many trees were so crowded with them that nothing else could get at the sugar, but at one end of my ground where they were not quite so plentiful, I secured nine *Epunda lutulenta*, four *Xylina semibrunnea* and one *Agrotis saucia*, besides many other species. *Aurago* was to be found in plenty every night for the succeeding ten days.

Xanthia gilvago.—This species occurs every year, at sugar, on some small beech and fir trees.

Cosmia pyralina.—This also occurs here, at sugar, but sparingly.

Aplecta occulta.—A single specimen, of a beautiful dark grey colour, was taken at sugar, a few miles away, seven or eight years ago.

Aplecta nebulosa.—Specimens taken here differ in colour remarkably from those

from the New Forest, the latter are white with distinct markings and very large, but ours are generally smaller and always much suffused with grey, approaching in this respect to Yorkshire specimens.

Xylina semibrunnea.—This species is to be found close to the town, even among the allotment gardens. We find it in the neighbourhood every year, at sugar and ivy.

Epunda lutulenta also occurs annually, at sugar.

Cucullia lychnitis.—On June 28th, 1873, I found larvæ near here on *Verbascum*, from which the moths were reared.

Eremobia ochroleuca.—The only specimen of this species which has occurred here, to my knowledge, was in the larva state, feeding on *Mullein* and was reared on that plant.

Spilodes palealis.—Taken here once only.

Pionea stramentalis.—I have taken two specimens in a wet bushy place.

Argyrolepis dubrisans occurs about chalk pits among the wild carrot.

Theristis caudella occurs in lanes among spindle, and in the spring is fond of flying across the road in the bright morning sunshine, when it looks very conspicuous.—WILLIAM HOLLAND, 138, Chatham Street, Reading: November 11th, 1884.

Colias Edusa near *Weymouth*.—*C. Edusa* has been common at Osmington during the past summer. I saw two ♂ there only last Saturday (October 25th) in a sheltered field, visiting *Scabiosa succisa*: *Vanessa cardui* has not yet retired into winter quarters, several were sunning themselves yesterday morning on the cliffs near Osmington Mill.—A. E. EATON, Osmington, near Weymouth: Oct. 30th, 1884.

P.S.—*C. Edusa* and *V. cardui* are still flying here.—Nov. 3rd, 1884.

Migration of Insects.—In the November number (*ante* p. 134) I noticed some remarks on the occasional occurrence of large numbers of certain species of *Lepidoptera* in Ireland, usually more or less scarce. In connection with this subject I thought the following might be of some interest. In June, 1879 (the 6th, as far as I can remember), I was on board a steamship in the St. George's Channel; the weather was warm and misty, and there was little if any wind. About the middle of the day a number of insects began to alight on the vessel, and several others were flying round, the species being *Vanessa cardui*, *Plusia gamma*, *Stenopteryx hybridalis*, and others, including some *Diptera*, such as *Musca Caesar*. This would seem to point to a migration of insects to or from Ireland, and, moreover, that the insects were not blown by the wind, but migrated voluntarily. It would be interesting to learn whether the species I observed were specially abundant or the reverse in Ireland in 1879.—T. D. A. COCKERELL, 51, Woodstock Road, Bedford Park, Chiswick: November, 1884.

Silk culture in Assam.—We have received from the India Office an important Official Report by Mr. E. Stack, Director of Agriculture in Assam, on the present state of the Culture in that district, and on the prospects of success so far as regards exportation to England is concerned.

The Report is confessedly by no means encouraging, but still hopeful. The indolence and suspicion of the natives stand much in the way. Silk is "cr..."

vated" there, but in a peculiar way. They have domesticated species, viz., *Bombyx textor* and *Cressi* ("Pât"), *Antheraea aassama* ("Muga"), and *Attacus ricini* ("Eri"). The two latter appear to be the most promising. It is recommended that the cocoons be exported, and not the thread. "Pât" seems to be a near relative of the ordinary mulberry silkworm, whereas the others are "tusser." The enemies, diseases, &c., to which larvae in Europe are subject appear to be equally present in Assam, and there are *rats* in addition. It is stated, with regard to "Eri," that the number of moults is *four*, that eight broods can be obtained in a year, and that the minimum life-cycle from egg to oviposition may be only 43 days (the maximum is given as 83 days). With "Muga" it is somewhat different. Five broods are recognised by vernacular names, and the minimum and maximum are 54 and 81 days respectively.

There are also about ten "wild" species of silkworms, some of which are probably only the original condition of the domesticated races; but others are totally different, and these are mentioned as of little importance; nevertheless, the silk is occasionally used for purposes of adulteration.

The empty cocoons of *Antheraea Paphia* (if correctly determined, the vernacular name for the form is "Sálthi,") are utilized as tobacco, or betel, boxes, or as cups for dipping oil. The pupæ of this, as of all other wild silkworms, are considered delicate morsels by the natives.

Mr. Stack's Report bears the impress of being genuine in all its details. The facts are concisely stated, and no attempt is shown to generalize upon them in a manner that would lead them to be suspected of being no longer facts.—Eds.

Green larva of Ennomos autumnaria (alniaria).—On the 16th August I found, between two sycamore leaves in my garden, a rather large "Thorn" larva of a green colour, minutely besprinkled with white dots.

Although a good many years have elapsed since I bred *fuscantaria*, I could not recognise it as being the larva of that species, but as it was evidently making up for pupation, I knew that a very short time would solve the riddle.

I must own, however, that I was greatly surprised when a finely coloured male *Ennomos autumnaria* emerged. I have reason to believe that the moths bred by Messrs. Tugwell and Davis (the latter this year) were all from stick-like *brown* larvae.

Autumnaria is evidently well established in this neighbourhood; I have had wild specimens every year since I came. It is, I am almost sure, attached to *sycamore*, as there is generally one of those trees near the gas lamps they have been taken on.

The bred specimens are better coloured and larger than those caught. The larvae in confinement do very well indeed on whitethorn, and thrive on it better than on birch or maple.—SYDNEY WEBB, Maidstone House, Dover: Sept. 19th, 1884.

[The published descriptions of this larva all seem to agree in giving the ground colour as *brown*.—Eds.].

Is Pterophorus gonodactylus doubled brooded?—Is it known whether *Pterophorus gonodactylus* is double brooded? It is usually supposed to be a June insect, but in this district is more frequently taken in the autumn, and during the past season was not uncommon at the beginning of September. The larvae of the early

brood are said to feed in April in the flower stem of *Tussilago farfara*, just below the flower head; but, by the time the larvæ of the second brood should be feeding, the flowers have of course long been over, and the larvæ must feed on or in some other part of the plant. To me there seems little doubt that this is the solution to the problem by Mr. C. S. Gregson in the *Entomologist* for July, 1873, p. 427, where he says, "I once bred a *gonodactylus*-like insect from a larva found feeding in a kind of gallery made in, or under, the woolly under-side of a coltsfoot leaf found growing on the limestone rocks at Llanferras in June."—Geo. T. PORRITT, Huddersfield: November 17th, 1884.

Notes on Dermestes vulpinus and other beetles in Sheppey.—About the end of October, having heard casually that a bone-boiling works at Queenborough was greatly infested with "bugs," which the workmen employed therein could not keep out of their houses, I took advantage of a cold, and consequent loss of the sense of smell for a time, to stroll over and see what the creatures really were. I never before saw beetles in such amazing abundance, the whitewashed walls in the interior of the buildings being literally blackened with *Dermestes vulpinus*, which could also be picked up by handfuls under bones, bits of sacking, &c., on the ground. With it *Neorobia rufipes* occurred in nearly, if not quite equal numbers, *Corynates violaceus* and *Alphitobius piceus* being also well represented: the last-mentioned beetle was more retiring in its habits than the other three, and was usually to be found in the folds of the sacks containing the bones.

The foreman of the works complained bitterly of the damage done to the wood-work of the building by the "bugs," and showed me a thick oak plank, about 12 feet long by a foot wide, reduced to a perfect honeycomb by the ravages of the *Dermestes* larvæ. These, when full-grown, had bored into the solid timber to change to pupæ, of which I dug out numbers with the point of a knife, as well as many imagoes in a pallid and immature condition. The other beetles appeared to do no damage whatever. Some fowls were kept in the works, in the endeavour to reduce the number of beetles, if possible; but they appeared to prefer picking the scraps of meat off the bones, which, I was informed, came from various parts of the world, but the greater portion was brought from South America.

On the same day I found a specimen of the rare *Aphodius consputus*, Cr. (named for me by the Rev. W. W. Fowler) in wet débris and dead grass on the bank of a fresh-water ditch, in company with large numbers of *Litodactylus leucogaster* and *Pachyrhinus canaliculatus*.

In the course of a walk along the Sheppey Cliffs yesterday, I found *Eirirhinus scirpi* not rarely in dead *Typha latifolia*, hibernating in the galleries bored in the plant by the larvæ of *Nonagria typha*. With it were *Limnichus pygmaeus* (very rarely), *Telmatophilus typha* (in profusion), &c., &c.—JAMES J. WALKER, 23, Ranelagh Road, Marine Town, Sheerness: November 18th, 1884.

Note on Helophorus crenatus, Rey, as a British species.—In a paper by M. Cl. Rey, just published in the *Revue d'Entomologie*, vol. iii, No. 9, entitled "Notices sur les Palpicornes, et diagnoses d'espèces nouvelles ou peu connues," there appears the following notice of a species of *Helophorus*, which is recorded as from Britain only: "*Helophorus crenatus*, Rey.—This species is related both to *H. strigifrons*, Thoms., and *H. planicollis*, Thoms. It has a less thick-set (ramassé) form than the

first, and the sides of the thorax more rounded. It differs from the second in not having the frontal fovea widened in front, and in having the elytra even more strongly crenate-striate than in that species. L. 3.7 mill. Angleterre (Pandellé)." Dr. Sharp regards both *H. planicollis* and *H. strigifrons* as varieties of *H. æneipennis*, and the above would seem to be another variety; it is, however, worth recording, and may be identified from the above notice by entomologists who may have it among their *Helophori*.—W. W. FOWLER, Lincoln: October 20th, 1884.

Captures of Coleoptera near Lincoln.—On October 23rd, in company with Mr. J. J. Walker, I went to Langworth Wood, about eight miles from Lincoln, for two or three hours' collecting. This wood is chiefly known to Entomologists as one of the localities for *Hesperia paniscus*, which has been fairly abundant this year during the end of May and beginning of June. The best beetle we took was *Epuræa parvula*, of which we beat about two dozen from faggots, from which we also obtained *Bradycellus placidus*, *Litargus bifasciatus*, *Alexia pilifera*, *Conurus immaculatus*, and *Ocalea castanea* in some numbers; I have never before found this widely distributed insect plentiful in any one spot; by sweeping we obtained *Erirhinus salicis* and *Batophila rubi*, and by shaking moss *Mniophila muscorum*, *Agathidium nigrinum*, *Cæliodes fuliginosus*, *Myllaena brevicornis*, and *Bythinus puncticollis*. Among other beetles I have at different times taken in this Wood are the following: *Choleva spadicea*, *Amphicyllis globus*, *Meligethes erythropus* and *viduatus*, *Scaphidoma æneum*, *Corymbites pectinicornis*, *Trachys minutus*, *Agapanthia lineatocollis*, *Rhytidosomes globulus*, *Rhynchites pubescens*, *Cæliodes subrufus*, *Elleschus bipunctatus*, *Ceuthorhynchus marginatus*, *Apoderus coryli*, *Thyamis patruelis*, and *Lina longicollis*, the latter abundant on sallows in all stages of development. On May 24th I took a very fine pair of *Aleochara ruficornis*; the female occurred on some long grass in a broad ride, and after an hour's fruitless sweeping for further specimens, I came back to the same spot and swept the male off evidently the same place where the female was taken.

In Nocton Wood, near Lincoln, I found last year, on May 19th, several specimens of *Symbiotes latus* and *Mycetophagus populi* in an old stump, accompanied by *Cis bidentatus* in some numbers; *Gyrophæna affinis* was common in fungi.

In flood rubbish near the town I have taken *Deinopsis erosa*, *Ilyobates nigricollis*, *Trogophlaeus halophilus*, *Lathrobium longulum*, *Anisotoma litura*, *Rhinonchus inconspicuosus* and *bruchoides*, and many others.

Saperda carcharias occurs close to the town, and *Ocypus fuscatus*, *Oxyptoda nigrina*, *Phlæocharis subtilissima*, *Trichopteryx longula*, and *Psylliodes picina* may be added to the above list.

The water beetles are singularly poor for a fen district, as far as I have worked them, which is, certainly, very little; not one rare species has turned up, the best that I have found being *Liopterus agilis*.—ID.

Idiocerus distinguendus, Kirschb., = *I. cognatus*, Fieb.—Although the accessible evidence warranted the conclusion stated by me, at p. 127 *ante*, that Kirschbaum's name for this species had priority over that given by Fieber, it yet appears that I was in error, for Dr. Franz Löw, of Vienna, who at my request has kindly referred to the works in which the respective descriptions were published, informs me that Fieber had priority of publication: the name to be adopted is therefore *I. cognatus*, Fieb.—J. W. DOUGLAS, Lewisham: October 31st, 1884.

ENTOMOLOGICAL SOCIETY OF LONDON.—September 3rd, 1884: R. McLACHLAN, Esq., F.R.S., in the Chair.

Lieut.-Col. C. Swinhoe, of Winchester, was elected a Member.

Mr. Coverdale exhibited a fine collection of *Micro-* and other *Lepidoptera* mounted in a new fashion on the heads of pins flattened out and turned down at a right angle.

Mr. Stainton exhibited specimens of *Coleophora limoniella* and *auroguttella*, and remarked on their distinctive characters; and he said that in Mr. Coverdale's box were examples from Shoeburyness that scarcely accorded with the typical *limoniella*.

Mr. Billups exhibited smooth spherical excrescences on birch twigs, about the size of small apples. They were hard, and with no trace of insect agency. It seemed to be uncertain whether they were, or were not, the young condition of the "witch knots" on birch which Miss Ormerod states to be due in the first instance to a *Phytoptus*. Also *Ocypus cyaneus* found by Mr. South in Devonshire, and *Loxops coccineus* captured by himself at Chobham. Also *Odynerus reniformis* and its parasite *Elampus Panzeri*, from Chobham.

Mons. Wailly exhibited, and remarked upon, several silk-producing Bombyces, some of which had been reared in this country for the first time.

Mr. Olliff exhibited, and remarked upon, a "*Cassida*" received by Lord Walsingham from Mr. J. C. Grant, of Bahia. It proved to be *Porphyraspis tristis*, Bohem. With it were the larvæ which cover themselves with a coating of filamentous excrement, not unlike an inverted bird's nest in miniature, and supported by a furcate anal process; they fed on cocoa-nut palm.

Mr. Poulton read a lengthy paper, illustrated by beautifully coloured diagrams, in continuation of his former remarks on larval markings, &c., and their protective associations. He detailed the history of several of the larger *Sphingidæ* from the early larval stages, showing the modifications undergone during growth, and the apparent influence of food, which although seemingly certain, did not appear to be constant. A discussion took place, in which Messrs. White, Stainton, Weir, McLachlan, &c., joined.

October 1st, 1884: J. W. DUNNING, Esq., M.A., F.L.S., President, in the Chair.

Haygarth Addison, Esq., of 145, Seven Sisters' Road, was elected a Member.

The Secretary read letters from Drs. Packard and Fritz Müller, thanking the Society for their election as Honorary Members.

Mr. Jenner Weir exhibited an example of *Vanessa cardui* from the New Forest, in which the under-wings had blue pupils to the spots. Also a large species of *Acrydidae* from the interior of Africa, of curious robust form, stated to be eaten by the Earthmen of the District (the Kalobari Desert).

Mr. Horner exhibited a long series of rare British *Coleoptera* recently captured by him, including *Myrmedonia Haworthi*, *Philonthus astutus*, *Homalota planifrons*, *eximia*, and *languida*, *Stenus morio*, *Dyschirius extensus*, *Trichonyx Maerkelii*, *Lathridius testaceus*, *Cryphalus fagi*, *Phlæotrya Stephensi*, and *Ocalea latipennis* and *castanea*.

Mr. J. J. Walker exhibited a large collection of beautiful *Lepidoptera* obtained during his recent cruise in the Pacific. All were in admirable condition.

Mr. McLachlan exhibited an example of a species of the Neuropterous Family *Nemopteridæ*, taken by Mr. Walker at Coquimbo, North Chili, and remarked

upon it as being the first recorded instance of the occurrence of the curious insects of this Family in America. He also exhibited a photograph of a Dragon-fly wing sent to him by Dr. Puton. This was the production of a young medical student at Lyons, and was prepared simply by placing the wing under glass upon a piece of sensitized paper and exposing it to light, the neurulation showing out most beautifully distinct in white on the dark ground. Mr. Meldola said any number of impressions might be produced from this, photographed upon glass. It appeared admirably adapted for truthfully detailing complex neurulation.

Mr. Billups exhibited a specimen of a species of *Homalomyia* bred by him, in which the left intermediate leg was perfectly double, so far as regarded the tibia and tarsi.

Baron Osten-Sacken communicated "Facts concerning the importation, or non-importation of *Diptera* into distant lands," in which much curious information was given, mostly in connection with North American species.

Mr. Rosenstock communicated a paper on Australian *Lepidoptera*.

Colonel Swinhoe communicated notes on the larvæ and habits of many species of Indian *Lepidoptera*.

November 5th, 1884: The President in the Chair.

A. W. Kappel, Esq., of Burlington Gardens, Chiswick, was elected a Member.

Mr. Douglas sent for exhibition specimens of the new British Homopteron *Idiocerus cognatus*, Fieb. (cf. ante pp. 127 and 162), taken by him at Lewisham, with examples of *I. tremula*, Estl., for comparison. Also the following *Coccida* from Lewisham, viz., *Lecanium ribis*, A. Fitch, from red currant (which, however, did not appear to materially damage the plants); *L. asculi*, Koll., ♂ imago, and ♂ and ♀ "scales," from horse-chestnut; *L. aceris*, auct., ♂ and ♀ "scales," from sycamore; *L. genevense*, Targ.?, ♂ and ♀ "scales," from hawthorn; *L. coryli*, L., ♀ "scales," from hazel. Likewise parasitic *Chalcididae* (*Coccophagus* and *Encyrtus*?) bred from the last four species.

Mr. Felton (present as a visitor) exhibited a large collection, principally *Coleoptera*, from Espirito Santo, Brazil. There appeared to be some interesting species.

Mr. Meldola exhibited the example of *Nonagria sparganii*, Esp., from Deal, recorded at ante p. 135.

Mr. Theodore Wood exhibited *Cis bilamellatus*, from West Wickham, recently described by him (cf. ante p. 130).

Mr. W. F. Kirby exhibited specimens of *Ephestia* bred from cocoa in a warehouse in London; they were mostly *E. elutella*, but *E. parasitella* was also apparently present. They occasioned great damage. Mr. McLachlan suggested "baking" as a remedy, but it was remarked (by Mr. Weir and others) that this remedy was scarcely applicable in large warehouses, with innumerable bags of the material stored therein. Mr. J. J. Walker said that *Ephestia* affected ship biscuits, and lime washing was found useful in such cases. Mr. McLachlan said that the insects would feed indiscriminately on any comparatively dry material, and Mr. Stainton doubted if any warehouse in London were free from them.

Mr. Olliff exhibited a specimen of the very rare *Parandra 6-striata*, from the Zambesi, belonging to the Museum at Amsterdam.

Baron Osten-Sacken communicated a new and revised edition of his *Essay on Comparative Chætotaxy in Diptera*, in which the importance of the characteristic bristles as a means of classification was insisted upon, as were also the connection of the bristles with the condition of the eyes, and of the latter with the habits of "poising" so well known in many Dipterous insects.

A WEEK ON THE "BROADS."

BY F. D. WHEELER, M.A.

During the last few years, the Norfolk Broads have come somewhat prominently before the public: not only have Mr. Barrett, Mr. Farn, Mr. Bird, and others brought their entomological treasures to light, but a large number of gentlemen from all parts of the kingdom have been attracted to them by the unrivalled opportunities they afford for yachting and fishing. In the present season, besides scores of parties from the inland counties, who had hired boats or pleasure wherries on the spot, I met with two gentlemen who had sailed round from Yorkshire in their own yacht, and heard of another who had come from Ireland in the same way. Consequently, I do not expect to be able to contribute anything new to a large proportion of readers of the Ent. Mo. Mag., but thought that a short account of a trip on these inland waters might be interesting to some of the large class of beginners who have not tried fen-collecting, and have not yet acquired a taste for more purely scientific articles.

The date of our excursion was fixed by "circumstances over which we had no control;" I should much have preferred to go earlier, but my occupation as a schoolmaster made that impossible, and we started on Saturday, July 26th. Our force consisted of three of my boys, whom I will designate as B. S., H. F., and H. S., and myself.

We made our start by the 9.13 train for Wroxham, where a cart met us to convey our traps to Irstead shoals, the port at which we were to embark. After getting out our boat, cleaning and trimming lamps, and other preparatory measures, we took our "trial trip," pulling away up the Ant, across Barton Broad—a fine stretch of water, close upon a mile in length, and of considerable width—and again up the Ant above the Broad, to a spot where I have many times had good sport. Here we got out our paraphernalia, lit and hoisted the big lamps,* and proceeded to explore.

The nature of what by courtesy we may call the ground, precluded us from going far; except on the river bank, there was nothing but a floating crust of vegetation, that yielded to the tread in a manner unpleasantly suggestive. As dusk came on, a few of the commoner fen species began to appear: *Hydrocampa nymphaelis* and *stagnalis*, *Paraponyx stratiotatis*, *Cataclysta lemnae*, *Eudorea pallida*, *Crambus pascuellus* and *selasellus*, *Chilo gigantellus*, *phragmitellus*, *mucronellus*, and *forficellus*, but though the night was breathless and not cold, the

* For description of apparatus, see Ent. Mo. Mag., vol. xiii, p. 246.

number of insects was small. As soon as it grew fairly dark, some few *Noctua* put in an appearance: *Leucania impura* and *Apamea fibrosa* kept us occupied by dashing round our lamps, and, among these commoner things, *Leucania straminea* occurred sparingly, while the sallow bushes around us, the leaves of which were covered with honey-dew, proved yet more attractive to *A. fibrosa* than our lights. After continuing our work till 11 p.m., without any startling success, we started for Irstead, taking at the last moment a fine specimen of *Celæna Haworthii*, a species of very uncertain appearance in the fens.

The return home was uneventful, thanks to long experience of the Broad, but small to a stranger would be the chance of finding his way across one of the larger Broads at night. Even by day it is wonderful at how short a distance the mouth of a river becomes invisible: the whole margin is fringed with reed, and marked with numberless indentations, among which the river mouth is lost. At night, then, when distant landmarks are invisible, the crossing of a Broad is a task not lightly to be undertaken, and the shores are so irregular, that to coast along them is a tedious, not to say impracticable, business.

On *Monday* commenced the grand work of embarkation. All our goods and appliances were brought down to the dock (a convenient recess behind an old alder stump) and had to be stowed away for the voyage; our vessel, and home for the week, consisted of an open boat, 19 ft. long \times 5 ft. 4 in. beam (the "Ant"), fitted with a mast and lug sail, but without keel, and drawing only 8 or 9 inches of water. As tender to this we had a small collapsible canvass boat of the Berthon Company pattern—"The Coracle." Into these two we had to pack the appliances for a week's boating expedition, including provisions, and the following sundries, viz.:—one setting case of 100 boards, containing also pins and other setting apparatus, 250 pill-boxes, nets, killing bottles, pinning boxes, &c., one box about 2 ft. \times 1 ft. 2 in. \times 1 ft. 4 in., containing large and small attracting lamp, the one for hoisting, the other to stand on the ground below for Micros, 9 ft. pole for lamp, tin box of books, papers, &c., fishing rods and apparatus, hand-lamps, and lamp for boat, one large tin (2 galls.) of paraffine, a smaller one of benzoline, and two of methylated spirits; and also ourselves.

But it is wonderful how things can be packed in a boat, and the "Ant" is fitted with lockers, not only at bow and stern, but all along the sides too, and has a box made to fit under the main seat. Thus, by careful packing, we stowed all the loose articles and heavy boxes on board, while the bedding and clothes were folded in the tarpaulin, and consigned to the "Coracle."

It was not, however, until afternoon that we fairly started, and the "Ant," with "Coracle" in tow, drifted down her namesake river, with a faint and fitful breeze. The morning had been cloudy, but the sun now shone hot and glaring, though the appearance of the sky portended rain. Needs not to tell of the "moving incidents by flood," by means of which we reached the Bure, ascended it for about two miles, then traversed Ranworth dam and the smaller Broad, and reached Ranworth Staithe about 4.30 p.m. Here we took on board *another* big lamp-box and pole, which really did begin to make our boat look full, and struck off for our camping-mud, for I can hardly call it either ground or water. In a recess of Ranworth Broad may be found (by those who know where to look for it) the mouth of a small dike, leading up to a fine expanse of fen. I say, advisedly, "by those who know where to look for it," for since I have been acquainted with the locality, its position has altered considerably: in these morasses, where the water is only an inch or two deep, a detached clump of *Typha* or *Sparganium* will drift into the channel and take root, and in one season the whole is closed, sometimes so effectually that it is more convenient to re-open it in a fresh direction. Even since the opening has been where now it is, I have directed a friend to it in vain, though I gave him full instructions, and even a rough plan of the Broad, he wholly failed to find the spot, so hard is it among the numberless indentations to detect the mouth of a narrow dike not facing directly toward the open water. The dike in question varies from 6 to perhaps 20 ft. in width, and from 6 in. to rather less than nothing in depth, as regards *water*—we had nothing long enough to sound the depth of *mud*, mud so liquid that you scarce could tell where water ended and mud began. Growing in it, and on both sides, and at times almost blocking it for many yards together, is a dense jungle of reed, *Sparganium*, *Typha*, &c., but occasionally it opens out into clear water, bordered by fens beautifully studded with flowers, yellow and purple loosestrife being predominant. Up this dike we forced the boat for about a quarter of a mile, by dint of over half an hour's hard pushing. Arrived at our encampment, I noticed a small *Tortrix* on the wing, it proved to be *Sericoris Doubledayana*, rather worn. Before tea was well over, the sight of other specimens took me ashore, and I soon had three or four *S. Doubledayana*, one *Eupæcilia Geyeriana*, and a few commoner species. While boxing the *E. Geyeriana*, I accidentally dropped a pill-box, and in searching for it among the herbage, disturbed a *Noctua*, which fluttered sluggishly up—a glance was enough—next moment, *Nonagria brevilinea* was in my net: the first of the season.

Now, we proceed to make ready for night. Two pairs of irons, into the form of an X, with the bottom half enormously expanded at the expense of the top, are fitted into sockets in the boat, the mast is laid upon them, and a cover of heavy unbleached calico stretched over and tied down tightly all round. Under this tent we spread our cushions, and then sally forth to work. We now light up at once, two of the boys taking one pair of lamps, I and the third the other, about 50 yards off, or rather more. Our boat is situated at N.W. angle of a low alder-car, or marshy plantation of alder and willow. The wind has now dropped away, and the night promises to be perfect, warm and close, with hazy clouds thickening fast as darkness comes on. We have not long to wait: it is scarcely dark when *Noctuae* begin to dash about, not exactly coming to the lamp at first, but yet passing within reach, and in quick succession, *Leucania impura*, *L. phragmitidis*, *Apamea fibrosa*, *A. oculatea*, *Noctua plecta*, *N. augur* (worn out), *Epunda viminalis*, *Nonagria fulva*, *despecta*, and *brevilinea* are announced, together with abundance of *Acidalia immutata* and *scutulata*, *Cabera exanthemaria*, *Fidonia clathrata*, *Lomaspilis marginata*, *Coremia unidentaria*, &c., while *Eudorea pallida*, *Paraponyx stratiotalis* and *Cataclysta lemnalis* are perfect pests. As the night draws on, *N. brevilinea* becomes more numerous, probably more so than any other single species of *Noctua*, and other things add to the excitement; the "footmen" are there, *Lithosia complanula*, three or four, *L. griseola* and *var. stramineola* by dozens, and a few *L. muscerda*, the latter unusually scarce and already somewhat worn; one or two *Odonestis potatoria* and *Bombyx neustria* dash wildly about, exciting B. S. to high-pressure pitch, presently he makes a furious rush, waves his net about, and returns in triumph with—*Abraxas grossulariata*! This now appears in force, but, though netting and examining scores of specimens, we did not detect a single variety. Presently comes a bang on the lamp-glass, followed by a noisy fluttering in the herbage, and *Smerinthus populi* is in the net. Then a big white moth proves to be *Liparis salicis*, a species that swarmed in parts of the Norfolk fens 12 or 13 years ago, but seems fast following in the steps of *Lycæna dispar* in this locality. More white *Bombyces* follow, but they prove to be only *L. auriflua*. And so the sport goes on, now active and exciting, with four or five moths round the lamps at once, now slacking off till, for several minutes at a stretch, nothing is to be seen but a "magpie" or two, and a few *A. immutata* and *P. stratiotalis*.

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any wind the lower lamp furnishes almost all the sport—even the things that are attracted by the top one drop down to the ground as they come near. Only one or two *Micros* come to it to-night, chiefly *Peronea Shepherdana* and *aspersana*, though with these there occur a few *Pædisca semifuscana*, two or three *Sericoris Doubledayana*, and one *Orthotænia antiquana*, an old inhabitant of the Cambridgeshire fens, but apparently scarce here. *Hydrelia unca*, too, is there, looking at first sight like some new *Tortrix*, and *Laverna phragmitella* helps to make up the score.

Later still, *Geometra papilionaria* puts in an appearance, then *Chelonia caja*, one only!, on the very spot where, four years ago, we had to net *caja* with great diligence, and destroy them, in order to give anything else a chance of getting near the lamp. But we are all tired, and at 1.30 a.m., though the captures are still fair, we agree to give up for the night. A steady gentle rain has set in some time ago, and for the last two hours we have all been working in macintoshes and leggings or high boots. The dress I find most suitable is a rough tweed suit, the coat with two pockets, each capable of holding 200 pill-boxes, or a vol. of the "Encyclopedia Britannica," marsh boots coming up to the knee, and over all in wet weather a fisherman's tarpaulin coat and sou'-wester hat.

Once back in the boat, we soon drop into our places, each encased in a sack drawn up under the arms, and for pillows, one with a carpet bag, another with the knife-box; but getting to sleep is not so easy: the first night on the boards of a boat is not conducive to sound sleep, though after a night or two nothing could appear more comfortable.

Tuesday.—Waked at 7 a.m. by our alarum, we get the bedding, &c., packed under cover, for it is still raining, though not much, and having made all ship-shape, remove the cover. We are due at Horning by 10 a.m., to pick up another of our boys, C. L. Accordingly, at about 7.45, we make a start, leaving behind the "Coracle" and all the heaviest luggage stowed away in the alder-car. The same agreeable process of pushing down the dike has to be gone through, then away to the ferry, which we reached just about our time, and settle down there for breakfast, the rain having now ceased. Presently C. appears, and we make our way back to Ranworth. On the way up the dike a keen look out is kept for larvæ of *P. Machaon* on the abundant heads of *Peucedanum palustre*, but only three or four are found, the bulk having apparently fed up; when we reached the camp, an extended search over the fen revealed any quantity of plants eaten, but very few larvæ. Having made ready for the night, we proceeded to com-

mence collecting; but a light N. wind had sprung up after the rain, and the air was clear and cold: *Micros* were hardly to be seen; beating the shallows produced a few *Teras caudana*, but nothing else of much interest, while in the open fen even *N. despecta* seemed loath to fly. The lamps at first produced very little, which was the more disappointing as C. had come but for one night, and I was anxious that he should have a good catch. However, most of the species of last night occurred, though in smaller numbers, and when at 10 o'clock we adjourned to the boat for a cup of cocoa, C. had already three *N. brevilinea* in his pinning box, besides several other insects. After supper, the night somewhat improved, *Abraxas grossulariata* became abundant, and *Cidaria testata* began to show up in numbers, while *A. immutata* was more numerous than we required. Eleven o'clock came, twelve o'clock, and then one *Chelonia caja* appeared on the scene! A shout ensued, and, much to my amusement, C., who had just before been boxing *N. brevilinea* with the greatest equanimity, appeared to have suddenly taken leave of his senses, and executed a paean of triumph, when, at last, he had actually secured his "tiger." A somewhat less violent demonstration announced the capture of *Geometra papilionaria*, and when, at 12.30, we turned in for the night, C. had a very fair box of insects; the others had also done pretty well at their lamp, taking *L. straminea* and *phragmitidis*, *N. brevilinea*, *Simyra venosa* (2nd brood), *G. papilionaria*, and other commoner species.

Wednesday. Up at 8.30; after breakfast, and once more leaving our impedimenta behind us, we push down the dike, and visited several promising localities in search of larvæ of *P. Machaon*. Of these we found only four or five, together with two or three of *Simyra venosa*, one of *Notodonta dromedarius*, and a few commoner species. Then we struck off for Horningferry, to put C. ashore, and faced back for Ranworth.

Meeting with a party of fishermen on our way back, who seemed to be having good sport, we moored to the bank close by them, under a magnificent reed rond, and tried our luck. But fate, or else the lack of ground bait, was against us, and we caught only two or three little bream flats, while our friends in the boat close by kindly exhibited for our benefit a lot of fine bream *they* had pulled out. We soon had enough of this, and made off for the camp. Arrived here, H. and I occupied ourselves in setting, for the captures of Monday night had only been pinned as yet, and those of yesterday were still in the boxes. For pinning insects from pill-boxes, I generally use chloroform, applied by a capillary bottle to a slit in the box lid; but it is a great

saving of trouble on board a boat to have a huge tin box, something like a broddignag laurel tin, into which the pill-boxes can be shot on returning from work, while the false bottom allows ammonia to be poured in: by the morning the moths are dead, and beautifully relaxed. Of course, all green and metallic-coloured insects must be kept out, but such do not occur much in the fens.

Dinner followed, or rather tea. The water of the "Broads" and dikes is rather too *lively* to be good drinking until it is boiled, so we had tea or coffee to every meal. Our stores had included several tins of soup, but we had no saucepan, so we had contented ourselves with *looking* at the soup, and eating other things; to-day, however, we made a bold venture, and, at the cost of burnt fingers, managed to heat some in its own tin; served out in tea-cups it proved delicious. This being the last night at our camping ground, I left the boys to wash up, and started to have a good hunt for *Micros* (the boys despise all "small beasts"). *Sericoris Doubledayana* occurs again, but sparingly—by the way, I never met with any other species (except, perhaps, *Cataclysta lemnalis*) that dies so soon in a pill-box; repeatedly I have found it dead and stiff before the next morning, when far smaller insects were quite lively. Moths on the whole are not plentiful on the early flight this evening, and of those that are about, the bulk are worthless—*Sericoris lacunana* and *Nonagria despecta* are the two commonest species.

It was now time to beat to quarters, so we took our positions for the night. For myself, I took one of the smaller lamps, and went round to the other side of the alder-car, to a spot where my friend Mr. W. H. B. Fletcher found *N. neurica* abundant some years ago. Here, however, I had no success at all: scarcely a moth was flying, and the only thing that visited my lamp was rather too large for capture—an owl! At 10 o'clock I struck, and came back to the boat. During the rest of the night I worked on our old spot, taking B.'s lamp, as he had turned in. Moths were not rare, but mostly of common species; *N. brevilinea* in very small proportion to the others—possibly we had thinned them off from that particular spot, the ♂s at all events, for the ♀s are not much attracted by light. One insect, however, was on the increase, *C. caja*. It was far from appearing in its old numbers, but I saw probably a dozen or more. One or two new species also turned up, *Caradrina alsines*, *Platypteryx hamula*, *Coremia propugnata*, and *Arctia fuliginosa*—a common insect in the Cambridgeshire fens, but not abundant in Norfolk. *Cidaria testata* is already becoming a pest, but to counterbalance this, *A. grossulariata* is going off. Soon

after midnight the boys turned in, and though I worked on till 1.30, I did not take much; the best being two or three *Gelechia palustrella*, and another *O. antiquana*.

Thursday. Next morning, after breakfast, we turned our back on the alder-car, and pushed down the dike for the last time, feeling very well satisfied on the whole with our work on this spot. Yet I do not think insects were so abundant as I have seen them there, and I missed some old friends. *Nudaria senex* and *Lithosia muscerda* used at one time to be almost pests at light, yet this season the one was wholly absent, and the other scarce. *Charæa graminis* was another species conspicuous by its absence, and our catch, though fair, was by no means so varied as I have known in former years.

In travelling down the dike, we secured a few *Gonopteryx rhamni*, just emerged, but the second brood of *P. Machaon* does not appear. On reaching the staithe we landed one of our attracting lamps, which had proved troublesome, to be sent to Norwich for repairs, and despatched B. S. to S. Walsham to procure a saucepan. Here, too, we found a fresh consignment of bread awaiting us—a welcome addition, for it is astonishing how rapidly provision vanishes on board. Our ambassador having returned in triumph with his saucepan, we proceeded down the Ranworth Dam, and down the Bure to our next camping ground, a very short distance, and this time alongside the main river. There was a small dike running about 100 yards inland, up which we intended to haul our boats, but the water was so low that our dike had become only mud, completely blocked with a dense growth of *Sparganium*, and, after pulling and heaving for a few minutes, we convinced ourselves that it was impracticable, and had to be satisfied with simply drawing up by the bank. Here we occupied ourselves variously. Next comes the work of getting things in order for the night: three promising spots are found, and the remaining three attracting lamps conveyed to them; the "Coracle" is drawn up and stowed inland, and all the impedimenta either put in the boat or concealed, for this is on the track of wherries, and small articles left lying on the bank are not always there when you return. All being made ready for the night, we adjourn to our posts, but can already foresee what our fate will be—the sky is cloudless, and a bright half-moon shining, while along the river and in parts of the fen, even now, a hazy mist is rising. Still, *N. despecta* and *E. pallida* are flying thickly enough, and, probably, other things may turn up. Night comes on, and the fog thickens, but ever and anon clears off a little, and during the intervals a few moths come to the lamps. By 10 o'clock it is thicker than ever,

and on meeting for a cup of cocoa, which B. S. has prepared for us, the boys decide to give it up for the night. Nobody has taken much. B. S. has secured one *N. brevilinea*, and I three; of other species, *Crambus paludellus* is the best, and of this each of the boys has taken one: I was too far inland for it. Leaving them to get an extra allowance of sleep, I went back to my lamp; nor was I unrewarded, for, by 11 o'clock, the moon had set, and for a quarter of an hour the fog wholly cleared off. During this interval sport was really good:—*Nonagria fulva*, of course, swarmed, but with it came *N. brevilinea* five or six, *L. straminea*, *S. venosa* (2nd brood), *Notodonta ziczac* and *dromedarius*, besides *Epunda viminalis*, *A. fibrosa*, *Hadena thalassina*, and the first instalment of that pest in the fens—*Noctua rubi*. But the fog then returned with redoubled strength, and though I waited till 12.30, it did not clear again.

Friday, August 1st. Up in good time this morning, but as we have not far to go, we decide to remain at our mooring till the afternoon, that the boys may try for butterflies. But the fates are adverse, and though *P. Machaon* is seen, they cannot catch one. At 2 p.m. we start again, re-ascending the Ant, toward Irstead: our destination for to-night, however, is a promising stretch of fen just opposite Howe Hill, or the "Mountain," which might be described in the guide books as "a lofty precipitous height, crowned by a windmill." In reality, it is a little hill of gravel, jutting into the surrounding marsh of the Ant valley, small in itself, but conspicuous by the level character of the fens for miles around, and commanding a most extensive view. We turned just into a dike leading into this stretch of fen, and settled down to the important occupation of dinner.

Having made all ready for the night, we walked down to the river, and availed ourselves of the first opportunity for some days of a bathe in which all could join, for the Bure is too deep for those who cannot swim, and the Ranworth mud is not exactly tempting. As we came back along the dike, *Chilo gigantellus*, with a few *C. mucronellus* and *phragmitellus* were on the wing, as well as *Nonagria despecta* and the universal *P. stratiotalis*; but the moon was high and bright, and there was every sign of a fog. Nor were we disappointed; the fog came on, thick and damp, while overhead not a cloud obscured the moon. Anything worse for lamp-work could hardly be, and except a *Chilo* or two, and a few of the common *Pyrales*, nothing came to the light. The honey-dewed leaves of the willows, however, were more attractive; *Apamea fibrosa* literally swarmed; *A. oculatea* occurred, and a single *A. ophiogramma*, three or four *Leucania straminea*, and *L.*

phragmitidis were sharing the feast, so that if not very profitable, at all events our night was not without interest. It is curious that so near as this piece of fen is to the haunts of *N. brevilinea*, yet that species should appear to be wholly absent; for I am persuaded that the sallows showed us a fair sample of the *Noctua* about, and *N. brevilinea* is well-known to be partial to this kind of banquet. Moreover, I had one night there last year, when the weather was eminently propitious for lamping, and saw none, though the next night it turned up on the Bure fens close to Ant Mouth, and less than two miles off in a direct line, with almost unbroken fen between the localities. I had on the former occasion taken *Gelechia palustrella* in some plenty here, and it was that fact in part that decided us to try it now. The *Gelechia*, of course, was absent, not wonderful on such a night, but it was more noticeable to miss *Charæa graminis*, which had simply swarmed before, and I would fain have repeated my former capture of *L. obsoleta* had it been but (as then) an odd specimen.

We all turned in pretty early, as there was really nothing to be done when the attainable sallow bushes had been examined, for not a moth was stirring after the first flight.

Saturday, August 2nd. Up at 6, and made a start as soon as possible for Irstead Shoals, which we reached in little more than half an hour.

Such was our experience, nothing surprising, or of special interest; yet I have thought that, perhaps, to those who have never seen a "Broad," and have scarcely netted a "wainscot," a rambling narrative such as this would give a more lively idea of the work and the locality than any formal description.

Should any beginner wish to try fen work, I would say—if he wishes simply to make the largest catch possible—let him go to some good locality, *e. g.*, Horning or Ranworth, or possibly Hickling, *and stop there*, working steadily *every* night, and all night long; if, however, he wish to combine as much pleasure as possible with his sport, let him hire a boat with fittings, so that he can sleep on board: a boat whose draught of water is small enough to allow it to get up the dikes, and yet one roomy enough to hold plenty of baggage; and let him wander at his will in this labyrinth of rivers and "Broad," exploring the great fen lands, of which only a small part as yet has ever known the tread of the entomologist.

The map accompanying this article may, perhaps, prove useful to future visitors to the district, and it indicates the several camping places during our excursion.

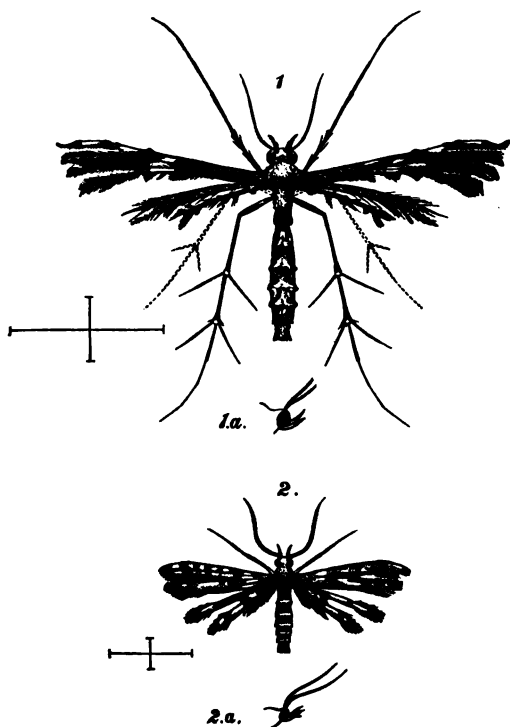
CHARACTERS OF TWO NEW GENERA OF *PTEROPHORIDÆ* FROM
SPECIMENS IN THE BRITISH MUSEUM.

BY LORD WALSLINGHAM, M.A., F.L.S., &c.

HEPTALOBA, gen. nov.

Palpi capite longiores; alæ anticæ ultra medium fissæ; lacinia singulæ, antica ad medium postica ultra medium, etiam fissæ; cilia digituli costalis ad apicem acuminata, aliorum sub-abrupte deflexa; alæ posticæ trilobatæ, fissuræ, antica vix ultra medium, postica prope basim, projectæ; digitum tertium denticulatum; tibiæ posticæ cristatæ, calcari-bus prelongis; abdominis margines sub-ciliatæ.

Palpi longer than the head, the third joint more than half as long as the second.



Fore-wings cleft beyond their middle; the anterior and posterior lobes being also cleft; the one to half, the other to more than half its length; the fringes of the anterior or costal division of the upper lobe running to a point at the apex, those of the other three divisions ending more abruptly.

Hind-wings with three lobes; the upper cleft extending very slightly beyond the middle, the lower cleft reaching nearly to the base. The posterior lobe toothed with projecting tufts of scales on the abdominal margin.

Abdomen somewhat fringed at the sides on the posterior edges of the segments, much ornamented with triangular pale markings above.

Legs with very long slender spurs, tufted above at the base of each pair. The first pair of spurs on the hind legs are equal to each other in length.

This Ceylonese genus is distinguished at first sight by the presence of four lobes in the fore-wings, instead of two only, as is usual in the *Pterophoridae*; *Deuterocopus*, Zell., which has three, being the only other known exception. It appears to be allied to *Amblyptilia*, Hüb., having the first pair of spurs on the hind legs equal to each

other in length as in that genus. It is remarkable that Mr. Walker should not have mentioned the very peculiar form of the fore-wings in his description of this species.

Type: *Heptaloba argyriodactyla* (figs. 1 and 1a).

Platyptilus argyriodactylus, Walker, Cat. Lep. Het., B. M., xxx, p. 929 (1864).

I would remark that the first plume of the hind-wings does not "become wider from the base to the tip," as asserted by Walker, and there are more than one small squamous tuft on the posterior lobe of the hind-wings.

CENOLOBA, *gen. nov.*

Antennæ fortes; palpi labiales capite bis longiores, maxillares depressi; alæ anticæ pæne ad medium fissæ, angulo anali obsoleto; alæ posticæ bilobatæ vix ultra medium fissæ.

Antennæ stout, reaching to the cleft of the fore-wings, pubescent in the male.

Maxillary palpi drooping. Labial palpi more than twice the length of the head, having the second joint slightly tufted beneath its apex, the apical joint short and somewhat obtuse.

Fore-wings cleft into two lobes nearly to the middle; the anal angle of the posterior lobe not defined.

Hind-wings widely cleft to a little more than half their length into two lobes only, the base of the cleft rounded; costal margin of the anterior lobe slightly raised towards the base.

The posterior pair of legs are wanting in the type.

The distinguishing peculiarity of this Australian genus is the possession of only two lobes in the hind-wings.

Type: *Cenoloba oblitalis* (figs. 2 and 2a).

Pterophorus oblitalis, Walker, Cat. Lep. Het., B. M., xxx, p. 945 (1864).

To Mr. Walker's description I would add—that there is a series of about seven inconspicuous spots along the costal margin of the fore-wings, and a conspicuous fawn-coloured spot at the base of the fissure in the hind-wings.

If this remarkably distinct genus is known to Mr. Meyrick, I hope that his knowledge of other Australian *Pterophoridae* may enable him to assign to it its proper position in the Family. Its appearance would place it near to the genus *Acipitilia*. The neururation is evidently very simple, but I have been unable to examine it critically.

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THE
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CONDUCTED BY

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R. M'LACHLAN, F.R.S.

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VOL. XXI.

"D'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus charitable."—*Laboulbène*.

LONDON:

JOHN VAN VOORST, 1, PATERNOSTER ROW.

MAPIER, PRINTER, REYNOLDS STREET, LUDGATE SQUARE.

Chobham, ♂ and ♀, Wandsworth, ♂, Bournemouth, ♂; Hastings, ♂ (Rev. E. N. Bloomfield); Gloucestershire, ♀ (V. R. Perkins); Norwich (J. B. Bridgman), apparently rather rare.

6. *longulus*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 25, pl. vii, f. 25.

Very like the preceding, but decidedly smaller and more elongate, it is one of the smallest of the genus. The ♂ is entirely black, and can only be confounded with the preceding and following species; from *puncticeps* the form of the lacinia will distinguish it, as also the pubescent bands of the antennæ, which are produced to nearly half the length of each joint; from *niger* its armature will distinguish it at a glance, and the wider 2nd sub-marginal cell of its wings with more contracted apex.

The ♀ may be known from *puncticeps* by its smaller size, paler legs, and paler red colour of the abdomen, and in the form of the apical dorsal valve, as given above.

Length, 5—5½ mm.

Chobham, 2 ♂, 1 ♀; Weybridge, 1 ♀ (T. R. Billups).

7. *niger*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 227, pl. vii, f. 26.

Another very small species, and very peculiar on account of the unusual form of the armature in the ♂, which is strongly transverse; the stipites scarcely strigose, and very short and wide, and the lacinia very short, narrow, and concave, otherwise in general appearance the ♂ resembles *longulus*, in colour the ♂ is black or piceous-black, and the genitalia dark brown; the narrow 2nd sub-marginal cell is also a character whereby this species may be known from *longulus*.

♀. 2nd sub-marginal cell scarcely contracted towards the apex; face much raised just below the insertion of the antennæ; abdomen with the basal segment entirely red, all the rest more or less clouded with black. Length, 5—5½ mm.

I have only seen a single pair of this species, taken by Rev. E. N. Bloomfield at Guestling, and which he has very kindly presented to me.

8. *pilifrons*, Thoms., Op., 99, 5; Hym. Scand., ii, p. 157. E. Saund., Trans. Ent. Soc., 1882, p. 197, pl. viii, f. 5. v. Hag., Deutsche Ent. Zeit., xxvi, 1882, pl. vi, f. 11.

A large species about the size of *gibbus*. Alar hooks 5—6.

♂ with the antennæ short, reaching to about the scutellum; the 3rd joint of the flagellum about equal to the 1st and 2nd together; the pubescent rings of the joints reaching to one-third of their length, or a little more; thorax rather wide, closely punctured, and clothed like the head with grey hairs, face densely clothed with white hairs; wings hyaline, 2nd sub-marginal cell wide; abdomen very shining; 1st segment black at the base, 1st and 2nd scarcely punctured, 4th and following black; armature with the lacinia sub-quadrate and sub-membranous thickened in a curved line across the centre, its apical margin fringed with long hairs.

♀ very like *gibbus*, &c., in colour, but with the thorax closely punctured, and clothed with greyish hairs; the apical dorsal valve wide and flat, punctured; spines of the tibiae pale.

Length, 9—10 mm.

Common in some localities. Chobham, Wandsworth, Worthing ; Norwich (J. B. Bridgman) ; Hampstead (T. R. Billups) ; Penzance (E. D. Marquand) ; Exeter (E. Parfitt) ; Gloucestershire (V. R. Perkins) ; Colchester (W. H. Harwood) ; Hastings (Rev. E. N. Bloomfield).

9. *similis*, Wesm., Bull. Ac. Brux., ii, p. 279, 1835. E. Saund., Trans. Ent. Soc., 1882, p. 198, pl. viii, f. 4. v. Hag., Deutsche Ent. Zeit., xxvi, 1882, pl. vi, f. 12.

♂ readily known from that of *pilifrons* by the shorter abdomen, the more rounded joints of the antennæ, the narrow 2nd sub-marginal cell, and the bifid lacinia of the armature.

♀ scarcely distinguishable from *pilifrons*, except in size and in the form of the dorsal apical valve, which is rather narrower, and has a distinct impression running parallel to the margin. Length, 6—8 mm.

Common in many localities. Bromley, Chobham, Canterbury, Southwold, Worthing, Littlehampton ; Norwich (J. B. Bridgman) ; Margate (T. R. Billups) ; Exeter (E. Parfitt) ; Penzance (E. D. Marquand) ; Gloucestershire (V. R. Perkins) ; Colchester (W. H. Harwood) ; Guestling, near Hastings (Rev. E. N. Bloomfield).

10. *ferruginatus*, Schenck. v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 221, pl. vii, f. 13.

♂ easily known by the unspotted red basal segment of the abdomen, and the rather broad form of the abdomen itself, so that but for the length of the antennæ and blunt apex of the abdomen, the ♂ very closely resembles the ♀ ; alar hooks 6—7 ; thorax shining, but somewhat closely punctured, pubescence at the base of the antennal joints extending to about one-third of their length ; genital armature with the lacinia straight along its external margin, which is slightly thickened at the apex, and with a triangular membrane on its inner margin, extending along and beneath the inner margin of the stipes ; stipes widely grooved at the base, the groove extending to about half its entire length ; extreme apex of the lacinia with long hairs.

♀ with the mesothorax more sparsely punctured than in the ♂ ; apical dorsal valve shining, testaceous, its centre narrowly and much raised ; alar hooks 6 ; 3rd abdominal segment without lateral foveæ. Length, 6—7 mm.

Very rare. Scotland, Dumfriesshire (R. Service), ♂ and ♀ ; Colchester (W. H. Harwood), ♂ ; Gloucestershire (V. R. Perkins).

11. *hyalinatus*, Schenck. v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 222, pl. vii, f. 14.

♂ very like the preceding, but decidedly smaller, with the extreme base of the 1st abdominal segment more or less black or dark ; the genital armature is very differently formed ; the lacinia being much shorter and wider at the base, so that its thickened portion is more or less triangular, its membrane is shaped much as in *ferruginatus*.

I cannot attach any ♀ for certain to this ♂, which at present I only know from specimens taken by Mr. V. R. Perkins, in Gloucestershire.

12. *variegatus*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 222, pl. vii, f. 15.

♂. Antennæ entirely black; basal pubescent rings of the joints very narrow; 2nd sub-marginal cell not twice as high as wide; all the segments of the abdomen banded with black; armature with the groove of each stipes extending almost to the apex.

The ♀ assigned to this ♂ by v. Hagens has the vertex of the head somewhat incrassate, the thorax very shining and finely and remotely punctured.

Length, ♂, 6—7 mm.

Chobham; Colchester (W. H. Harwood); Gloucestershire (V. R. Perkins); Norwich (J. B. Bridgman).

13. *divisus*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 223, pl. vii, f. 16. Kirby??

I have a single ♂ which seems to agree with this species: it has the antennæ rufescent in front, and the 2nd sub-marginal cell exceedingly narrow, more than twice as high as wide, but otherwise it seems to me identical with *variegatus*. Kirby's description seems to me to agree better with *similis*, ♂; but in his collection several species are mixed under this name.

Chobham.

14. *dimidiatus*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 224, pl. vii, f. 19.

♂ small and narrow, easily recognised from all but the following by the form of the joints of the antennæ, which have their faces flattened and pubescent, almost up to the apex of each; from the following it may be known at once by the form of the genital armature; the dilated apex of the lacinia produced on its inner margin being an easily observable character.

♀. The female which v. Hagens thinks belongs to this ♂ is a small, brightly coloured insect, with a rather largely punctured thorax.

Length, 6—7 mm.

Chobham, ♂ ♀; Gloucestershire (V. R. Perkins), ♀; Norwich (J. B. Bridgman); Penzance (E. D. Marquand), ♀.

15. *affinis*, v. Hag., Deutsche Ent. Zeit., xxvi, 1882, p. 224, pl. vii, f. 21.

♂ distinguishable from the preceding, as stated above. The armature has the lacinia a little produced on to its membrane near its middle, and narrowed again to the apex.

The ♀ which v. Hagens suggests for this species is very like that described for *dimidiatus*, but has the thorax exceedingly shining, and the puncturation much finer and more remote.

Chobham, ♂ ♀; Colchester (W. H. Harwood), ♂ ♀; Gloucestershire (V. R. Perkins), ♂ ♀; Norwich (J. B. Bridgman); Penzance (E. D. Marquand), ♀.

St. Ann's, Mason's Hill, Bromley, Kent:
November, 1884.

ON THE AUTHORSHIP OF THE LETTER-PRESS IN
VOLUMES I, VI, AND VII OF
THE ENTOMOLOGY IN "JARDINE'S NATURALIST'S LIBRARY."

BY H. T. STAINTON, F.R.S.

In our last number (p. 155) Mr. A. G. Butler has some notes on *Scopelodes unicolor*, and he there says: "The genus *Scopelodes* was characterized by Westwood on page 222," &c. I wrote to Mr. Butler taking exception to his words "*characterized by Westwood*," and my remarks ran thus:

"On referring to page 222 of the volume, it would seem to me that the whole of the text is written by the author of the volume, James Duncan—there is no intimation that a syllable was written by Westwood, who had probably supplied a MS. name to the insect in Mr. Hope's collection.

"Your note says 'The genus *Scopelodes* was characterized by Westwood on page 222,' &c. I cannot find any indication of this in the volume myself—there are no inverted commas implying any quotation or extract from the MS. of another writer."

To this Mr. Butler replied as follows:

"The genus *Scopelodes* has always been quoted as Westwood's, and Mr. Moore, who is almost hypercritical (if that be possible) in the authorship and date of publication of genera, quotes it thus—*Scopelodes*, 'Westwood, Nat. Libr.'

"From an examination of the text in the volume it is evident that Duncan was supplied by Westwood with the greater part of his information, and there is every reason to believe that the characters of the new genera and species were also obtained from the same source: at page 209 you will see '*Asthenia podaliriaria*, Westwood. In supplying us with a figure of this new species, Mr. Westwood has suggested the propriety of referring it, along with several others, to a new genus, which he names *Asthenia*.' Then follow the generic characters.

"The style of description corresponds entirely with Westwood's descriptive work. See 'Cabinet of Oriental Entomology,' and other early works by this author. At the same time, perhaps, the question is worth ventilating; Professor Westwood probably will remember whether he wrote the descriptions for Duncan or not."

Acting upon this last suggestion, I next wrote to Professor Westwood, and, after explaining how it happened that such a curiously knotty point had arisen, I remarked:

"Duncan heads the page (222) with '*Scopelodes unicolor*, Westwood,' and the insect is described from Hope's collection, but I cannot see it anywhere mentioned that you furnished the characters, or any portion of the *letter-press*—the advertisement at p. xi says, 'For many of the illustrations we have been indebted, as on former occasions, to Mr. Westwood.'

"Some of the Plates bear 'J. O. Westwood, delt.,' but Plate 28, which figures the *Scopelodes* in question, bears no such indication.

"The question I would put to you is this—whether James Duncan or J. O. Westwood wrote the *letter-press* relating to *Scopelodes unicolor*?

"As similar questions may some day arise as to other insects treated of in this volume, it would be very desirable (if not taxing your memory too much) to solve such problems once for all, whilst you are still a working Entomologist."

In reply to this appeal, Professor Westwood has very kindly sent me a complete account of his connection with the Entomological volumes of Jardine's Naturalist's Library, which I therefore print *in extenso*:

Walton Manor, Oxford:

December 1st, 1884.

Your enquiry concerning my *Scopelodes unicolor* affords me an opportunity, of which I am glad to avail myself, of setting myself right, with my brother Entomologists, as to the extent of my share in the production of the seven volumes on Entomology forming a portion of "The Naturalist's Library by Sir William Jardine," namely:

"Introduction to Entomology, Vol. I, by James Duncan, M.W.S.," 1840.

"Entomology, Vol. II, Beetles, by James Duncan, M.W.S.," 1835

"Entomology, Vol. III, British Butterflies, by James Duncan, M.W.S.," 1835.

"Entomology, Vol. IV, British Moths, Sphinxes, &c., by James Duncan, M.W.S.," 1836.

"Entomology, Vol. V, Foreign Butterflies, by James Duncan, M.W.S.," 1837.

"Entomology, Vol. VI, Bees," 1840.

"Entomology, Vol. VII, Exotic Moths, by James Duncan, M.W.S.," 1841.

I may say, at starting, that of Volumes II, III, IV and V I know no more of their authorship than is given on their respective title-pages as above, and that I had no personal acquaintance with Mr.

Duncan, never having, to my knowledge, even seen him, and certainly he never saw one of the insects, which were published for the first time in the Naturalist's Library from my drawings. With the view of giving to some portion of the other Entomological Volumes an amount of originality, which was wanting in the majority of the Volumes of the Work, I was applied to in the years 1840 and 1841 to furnish drawings of new and beautiful species of insects for the Introductory Volume, the Volume on Exotic Moths, and some exotic bees for the Volume on "Honey and other Bees."

These additional species were selected by myself from the collection of the Rev. F. W. Hope and my own, and the drawings, with a popular description of each species (not, however, accompanied by a technical Latin character) were forwarded by me to Edinburgh, but, unfortunately, I never saw a proof either of the plates which contained my figures or of the text in which my descriptions were introduced by Mr. Duncan, without any indication of what was mine or what his own comments.

THE INTRODUCTION TO ENTOMOLOGY, VOL. I, commences with an "Advertisement" (as was also the case throughout the work) containing a notice of forthcoming Volumes and notes of others already published. In this Advertisement we read, in reference to the then unpublished Volume on Exotic Moths, that "drawings of new and splendid species of moths are now in preparation by Mr. Westwood, to whose elegant pencil we have likewise, as will be seen, been largely indebted on the present occasion in the Volume which this accompanies."

My share in the 1st Volume was as follows :

Plate VI was occupied by structural outlines of the chief characters of the Order *Orthoptera* including a figure of "*Acheta arachnoides*" described on page 248, where we are informed "Mr. Westwood has given it the specific name of *arachnoides*."

Plate IX contained my figure of "*Deroplatys disiccata*," properly described in the text, p. 234, as "*Mantis (Deroplatys) desiccata*, West."

Plate XIV contained my figure of "*Anostostoma Australasie*," stated (in p. 255) to have been first described by Mr. Grey (George Robert Gray), in Mag. Nat. His., N. Ser., I, 143.

Plate XVIII contained figures of the leading characters of the Heteropterous *Hemiptera* (described on p. 269), and of the *Homoptera* (on p. 270), with a figure of "*Polyneura ducalis*" described in the

text, p. 277, as *Oicada* (*Polynœura*) *ducalis*, "and considered by Mr. Westwood as forming a distinct sub-genus."

Plate XX, Fig. 3, "*Anisosceles hymeniphera*" (unique in my collection), at p. 275 we read "for a figure and the following notice of this new species of *Anisosceles* we are indebted to Mr. Westwood."

Plate XXIV, Fig. 1, "*Aphana submaculata*" noticed on p. 284.

Plate XXV, Figures of *Centrotus globularis* and *O. furcatus* together with a new species, "Mr. Westwood names it *C. bicalvatus*," p. 286.

Plate XXVI, Figures 1—14. Details of the leading characters of the *Neuroptera* from *Libellula*, in the description of which, p. 288, the Plate is misquoted XXVII, the word "*trophian*" is a misprint for "*trophie* are," "*Ehenarium*" is a misprint for "*Rhinarium*," and p. 289, "labrum" is a misprint for "labium"; figs. 15—23 give the details of the *Hymenoptera*; and fig. 24 represents *Joppa antennata* (p. 315), Fab. Syst. Piez., 122.

Plate XXVII, Fig. 3. *Nemoptera angulata* (p. 293), "West.; Tran. Ent. Soc., Vol. I, p. 75."

Plate XXVIII, Fig. 2. *Stilbopteryx costalis* (p. 294), Newman; Ent. Mag., No. 24, p. 400, here figured for the first time.

Plate XXXVII, Fig. 1, *Asilus abdominalis*, and described p. 329, as *Asilus* (*Blepharotes*, West.) *abdominalis*; fig. 2, *Acanthomera immanis* (p. 331), Wiedemann.

[This Plate is referred to in the text as Plate XXXV, which it really is in numeral order, following immediately after Plate XXXIV and being the last in the volume.]

ENTOMOLOGY, VOL. VI, Honey and other Bees, 1840.

No author's name is given on the Title-page, but an anonymous reverend writer is stated in the "Advertisement" to have supplied the literary details respecting the Honey-bee, and Mr. Duncan's name is given, who is said to have "availed himself of the invaluable assistance of Mr. Westwood for drawings and descriptions of various figures, which now, in some cases, appear before the public for the first time."

Plate XVI, Figs. 1, 2, Orange-tailed bee (*Bombus lapidarius*, Linn. m. and f.), fig. 3, Moss or Carder bee (*Bombus muscorum*, Linn.).

Plate XVII, Fig. 2, Great humble-bee of Valparaiso (*Bombus grandis*, Guérin, Iconogr.), p. 256.

Plate XVIII, Fig. 1 and p. 256, Harris' humble-bee (*Bombus Harrisellus*, Kirby); Fig. 2 and p. 257, *Apathus vestalis*, Kirby; Fig. 3 and p. 259, *Apathus rupestris*, Fabricius.

Plate XIX, Fig. 2 and p. 262, *Euglossa analis*, Fig. 3 and p. 263, *Aglæ cærulea*, Enc. Méth.

Plate XX, Fig. 1, *Centris nobilis*, "named by Westwood," p. 264.

Plate XXI, Fig. 1, *Xylocopa teredo*, Lansdowne Guilding, male ; Fig. 2, female ; Fig. 3 and p. 270, *Xylocopa corniger*, Westw.

Plate XXIII, Fig. 2, *Xylocopa tenuiscapa*, and p. 271, *Xylocopa* (*Platynopoda*, West.) *tenuiscapa*, Westw.

ENTOMOLOGY, VOL. VII, Exotic Moths by James Duncan, M.W.S., 1841.

In the Advertisement, p. xi, we read "For many of the illustrations we have been indebted, as on former occasions, to Mr. Westwood. Two of these have reference to the illustrious subject of the Memoir (Latreille). One exhibits his Cemetery (*sic*) in Père la Chaise, the other is a *fac-simile* of the Notes attached to his dissections of insects. There are many hundreds of these in existence, chiefly of *Ooleoptera*."

[This collection of Latreille's Notes was given to me by the late A. Melly, each note containing the actual dissections, chiefly of the mouth organs, of a genus, descriptions of the same in Latreille's small cramped hand-writing and rude sketches of various of the organs dissected. The collection is now preserved in the Hopeian Museum.—J. O. W.]

Of the Plates of Moths contained in this volume—

Plate II, Fig. 1 and p. 83, is an original figure of *Agarista picta*, Leach., Zool. Misc. ; Fig. 3 and p. 88, *Eusemia maculatrix* (Westw., *n. sp.*).

Plate III, Fig. 1, *Eterusia tricolor*, Hope, Linn. Trans. ; Fig. 2, *Erasmia pulchella*, Hope, Linn. Trans. ; Fig. 3, an original figure of *Phalæna sanguiflua* of Drury, formed by me into a new genus *Amesia* (p. 93).

Plate VIII, Fig. 4, *Zeuzera minea*, Cramer.

Plate XIII and p. 138, *Saturnia Isis*, Westwood.

Plate XXIII, Fig. 1, *Hypercompa*? (*Hypercampa* in plate) *Sybaris*, Cramer.

Plate XXIV, Fig. 2 and p. 193, "*Oydosia nobilitella*, Westwood" (*Phalæna nobilitella*, Cramer, pl. 264).

Plate XXVIII, Fig. 1 and p. 220, "*Epidesmia tricolor*, Westwood ;" Fig. 2 and p. 222, "*Scopelodes unicolor*, Westwood."

Plate XXIX, Fig. 1 and p. 209, "*Asthenia Podaliriaria*, Westwood;" Fig. 2 and p. 212, "*Macroteles netrix*, Westwood," *Phalæna netrix*, Cramer, pl. 151.

Plate XXX, Fig. 1, *Dichroma equestralis*—in the description, p. 224, line 6, for "reflexed" read "deflexed," and in p. 226, line 10, for "head, wings" read "hind-wings." Fig. 2 and p. 227, *Dichroma histrionalis*; Fig. 3, p. 228, *D. arcualis*.

The above are all the figures, which I contributed to the Naturalist's Library, and in most instances my name is added at the foot of each plate in which my drawings were engraved, even where figures from Cramer or other previous works were engraved on the same plates as mine. Sometimes, however, my name is not added at the foot of a plate which contained my drawings, as in the Volume of Exotic Moths, Plate XXVIII.

I am sorry to trouble you with all these technicalities, but I quite agree with you that it is better they should be given, to avoid other enquiries of a similar nature at a future time, when no such explanation could be given.

J. O. WESTWOOD.

ON THE PROBABLE EXTINCTION OF *LYCÆNA ARION* IN ENGLAND.

BY HERBERT W. MARSDEN.

As *Lycæna Arion* has been a species of great interest to me for many years, and as I have paid much attention to its appearance and distribution in this locality, a few notes from me may be of interest to the readers of the Ent. Mo. Mag.

It was on the 17th June, 1866, that I first saw the species alive; when, in the course of a long Sunday ramble, I captured a single specimen in a narrow valley amongst the Cotswold Hills. A few days later I took another, high up on the open common ground, and more than a mile from where the first was seen.

From that year until this I have regularly visited the localities I discovered during 1867—70. Since 1869 I have kept no regular diary, but only in 1870 did I find the insect really plentiful.

The early part of June, 1867, was dark and cold, and I only secured some twelve or fifteen examples of *L. Arion*, usually not more than two or three specimens in any one day: the first being seen June 20th. These were all taken at what we may call the Stroud end of

the district, described by Mr. Goss on pp. 107—9 of this volume; nor was it until 1869 that I traced it northwards to other and more prolific localities.

The season, May and June, 1868, was hot and brilliant, and I found *Sesia tipuliformis* emerged in my garden as early as June 1st, *L. Arion* appeared June 5th, which is the earliest date I ever heard of the species being out; but although rather more plentiful than the previous year, it was still rather scarce.

In 1869 (another fine or partially fine season) it was more abundant, and I find from my diary that on June 19th I took ten at rest about sunset. Early the following morning I again traversed the ground, but saw none, so spent the day elsewhere; returning about five o'clock in the afternoon. I then saw over a score, of which I boxed about half, letting the others pass.

The year 1870, however, is the one to be marked with a white stone by the lovers of *Lycænidæ*. I have not my notes for this year, but it was about the 11th June that *L. Arion* was first seen, and for the next ten or fourteen days it was fairly common, and it appeared much more widely distributed than in any other year I know of, either before or since. It would, I am sure, have been possible for an active collector, of the greedy school, to have caught over 1000 "large blues" during the season, for in a few visits I secured about 150, not netting half of those seen, and turning many loose again. Nor was it *L. Arion* only that was common; all the "blues" appeared unusually abundant this season, and one memorable evening, just at sunset, I found at rest on the long grass in a disused quarry, no less than seven *L. Aegestis*, so close together on one stalk of grass, that I easily got six of them into a pill-box at the first attempt. Within a few inches were five beautiful *L. Arion* also at rest. These twelve butterflies were all within a space less in size than the crown of a man's hat. It may be in place here to note that when the weather has been fine and bright, and promises to continue settled, *L. Arion* rests at night high up on coarse stalks of grass, and is then very conspicuous; whereas, in dark unsettled weather, they betake themselves to low thick tufts of grass or nettles.

During the next few years *L. Arion* continued to appear, but very irregularly, as regards numbers. The best seasons since 1870 being those of 1876 and '77, the latter especially, but on no occasion has it been nearly so abundant as in 1870. As the years '76 and '77 have been fully described in Mr. Goss's paper, I need not dwell further upon them.

Now come the dark days. Part of June, 1877, was damp and broken; not at all the bright warm skies *L. Arion* loves (1876 was very hot for part of June). In dark cloudy weather they are always still, and, I believe, they will only deposit their ova when the sun is warm and bright. In 1878 the weather was worse, there being hardly a fine day in the month. 1879 was yet worse than '78, and since then until this season the same class of weather has been prevalent. Now, during all these seasons I have gone or sent many times at the time *L. Arion* should be out. In 1878, not over a dozen were seen, mostly worn and weather-beaten, for there were hardly ever two consecutive fine days. In 1879 they were yet scarcer, while in 1880, if my memory serve me rightly, only two were obtained, and two or three more seen. For the four years, 1881—84, not one has been seen in the Gloucestershire district that I have been able to trace.

I will now say a few words about the distribution of *L. Arion*. Such years as it has been rare, it appeared to be entirely confined to two or three spots of very limited area, whereas when commoner, and especially in 1870, it cropped up here and there nearly all through the country between the two chief "head quarters," which are nearly three miles apart. It also occurs in two or three other localities, one of them being over ten miles away, but everywhere it is limited to small areas.

One point of interest would appear to be this. My friend Mr. Merrin used to take the species about a quarter or half a mile further west than I have ever done, and at that time he knew of no other locality. Since I have been acquainted with the species, not one has been taken in this old locality, although often visited at the right time. So local does it seem, too, that, although I have taken it freely up to a certain point, I could never find a specimen beyond the sides of this one old quarry, in the direction of the old head quarters, notwithstanding that the formation of the ground, herbage, &c., appear identical with that where it was common.

Now, what is the probable cause of the diminution or extinction of *L. Arion*? To my mind the greatest, if not the sole, cause has been the continued prevalence of unfavourable weather, which alike caused an immense decrease in the blossoming of the wild thyme, and prevented free oviposition by the parent butterflies. It will be noted that with continued and increasing fine weather, 1866—1870, the species gradually increased also, until in 1870 it was common. Then followed broken seasons, with irregular appearance of the butterfly, but still in sufficient number to take advantage of the fine June of

1876. In 1877 they were commoner than in the previous year, but the month of June was partly broken. Many fewer butterflies appeared in '78, and they hardly had a chance of continuing the species; and from then until 1884, there has not been one fair season.

The question now is: have ANY survived this long series of bad years? If only a very few are left, with the finer June of 1884, and should we be favoured with a similarly fine month in 1885, there is hope that *L. Arion* may again become, if not abundant, still not so very rare; but I fear this hope is but a very faint one.

Burning the grass has, I think, become more prevalent over one of the localities noticed, and it must have had some bad effect; but the other has never suffered from this to any appreciable extent; so this cannot be *the* cause, although it may have been an assisting one. As to the "rapacity of collectors," I can say emphatically that it has had no share in the diminution of the species in the district in question. The locality towards Stroud is, I believe, known only to four or five people, including Mr. Goss, to whom I showed the ground in 1876. Only Mr. Merrin and myself have ever systematically visited the ground, and, as will be seen from the record of my experience as given above, no harm can have been done by me in this manner, and Mr. Merrin has never taken nearly so many as myself. In all my wanderings over the Stroud end of the ground I *never* met a stranger collecting, and only on one occasion, at the other end, and this was, I know, only a passing day's visit by an amateur. While, however, I am thus positive that over-collecting has not had anything to do with the disappearance of *L. Arion* here, I am none the less convinced that it would have been easy for one or two active collectors to have made a clean sweep of the species, and exterminated it in a series of two or three years, no matter how favourable the weather might have been. It has been this conviction that prompted me never to publish the exact locality, and also to be careful myself never to take all I saw, and generally to preserve the species as much as possible.

I have said nothing here about the larva of *L. Arion*, because nothing further appears to have been learnt of it since Mr. Merrin and myself supplied ova to Mr. Porritt and others in 1870. We then all saw the newly-hatched larvæ feeding on blossoms of wild thyme, and that was the last of it. At different times I have spent many hours in search for older larvæ without avail.

Abnormality in Epinephelus Hyperanthus.—On July 22nd, 1883, I took two interesting specimens of *E. Hyperanthus*, shewing a want of symmetry on the under-side. The typical form of the species has on the under-side (according to Newman) eight ocelli, three on the upper, and five on the lower wing. These we will call 1, 2, 3, 4, 5, 6, 7, 8,* and thus we should give Newman's type specimen a formula thus—left wings, 1, 2, 3, 4, 5, 6, 7, 8; right wings, ditto. A spotless form would be represented thus—0, 0, 0, 0, 0, 0, 0, 0; and in the same way any other specimen might be readily described by substituting a cypher for an absent spot, and placing a convenient figure, say X, for any extra ocellus; and also when two ocelli become partly united they may be expressed by bracketing them together, for instance, Newman figures a variety which would have a formula thus—1, 2, 3 (4, 5, X,) 6, 7, 8. Having explained my plan, I will now adapt it to my two asymmetrical specimens which I caught near Warlingham, in Surrey. The first, the more remarkable, has a formula 1, 2, 3 (4, 5,) X, 6, 7, 8, for the right under-side, but on the left side it is 1, 2, 0 (4, 5, X,) 6, 7, 8. The second specimen has the right side 1, 2, 3 (4, 5,) X, 6, 7, 8, as before, but the left is 1, 2, 3 (4, 5, X,) 6, 7, 8. Thus we see that in both cases the additional small spot X was united with 5 on the left, but disunited on the right side, while in one specimen the 3rd ocellus on the upper wing was entirely absent on one side, but well marked on the other. I sent the specimens to Mr. Kane, of Dublin, who tells me that such aberrations are rare. Can any reader remember a similar instance?—T. D. A. COCKERELL, Bedford Park, W.: November, 1884.

Tapinostola Bondii in the Island of Rügen.—In the Stettiner entomologische Zeitung, 1884, p. 432, Major Alex. von Homeyer records the capture by him, on August 2nd, 1879, of a ♂ near Stubenkammer in Rügen. We do not think the insect had hitherto been recorded from other than its old localities, viz., South of England, and Greece.—EDS.

Note on Dichrorhampha tanaceti.—I have long been puzzled as to what this insect really is. Mr. Stainton, in the Manual, includes it in the genus *Dichrorhampha*, the males of which possess a costal fold. In all the specimens which have been sent to me as *tanaceti*, the males have no fold, nor have I been able to detect one in the series of the insect I have observed elsewhere. If these insects are *tanaceti*, Mr. Stainton must have had some other species before him when he wrote his description for the Manual.

On examining the late Mr. Doubleday's collection at the Bethnal Green Museum a short time ago, I found, to my surprise, the species *tanaceti* represented there by only three specimens, all males, with the fold, but most certainly all *D. herbosana*, or, rather, what we have for some years been calling by that name.

D. herbosana I myself bred in Yorkshire from roots of tansy and yarrow, among which plants I also caught them flying in numbers, and I cannot be mistaken about the species.

Again, Mr. Elisha has this season bred from roots of tansy a long series of what he calls *tanaceti*, and which agree exactly with the specimens sent to me under that name. I conclude, therefore, that the name *tanaceti*, which stands in the Doubleday collection, applies to what we now call *herbosana*, a true *Dichrorhampha*, and that

* The system I here propose is taken from that in use for indicating the arrangement of the bands of certain *Helices*. I think it would be found to serve for all the *Satyrina*.

the species generally known as *tanaceti* should be called *saturnana*, a species, I believe, never yet bred till now, and which the description as given in the Manual exactly suits.

I think I can throw some light, or, rather, darkness, upon the existence of another species—*seneclana*. No one exactly knows what this insect is. There is one specimen so named in the Doubleday collection, which, if I mistake not, is a female *herbosana*. This sex of that species would appear to be scarce. I only bred one ♀ to about three dozen ♂. It is smaller and darker than the ♂, and has the triangular paler blotch on the inner margin more irregular, and that at the anal angle more metallic. *D. tanaceti*, probably like *herbosana*, feeds on both tansy and yarrow roots. Mr. Barrett remarks that it occurs on the coast of Pembroke, where no tansy grows. I have written to Mr. Thompson, of Stantonbury, formerly of Crewe, who is named by Mr. Stainton as the original captor of *tanaceti*, to ask him to allow me to see, if he has them, any of the original specimens. He replies that he sent many of his original captures of this species to Messrs. Douglas, Stainton, and other London collectors, and that Mr. Stainton, before naming them, sent them to Prof. Zeller. Mr. Thompson's own specimens being set on old pins, corroded, and all but one were replaced by specimens sent him by Mr. Grigg, of which he remarks, "but these are not exactly like mine." I should think not. He has sent me his single remaining specimen—a ♀—but that is quite enough: it is a true *herbosana*, ♀. —W. WARREN, Merton Cottage, Cambridge: October 12th, 1884.

[Mr. Douglas has now forwarded me three specimens of *Dichrorhampa tanaceti* from his cabinet, which are *very likely* to be those sent to him by Mr. Thompson, and I find that these are undoubtedly identical with my *herbosana*. It seems, therefore, that the name *herbosana* should drop, but I am not yet satisfied that the species we usually find about tansy in the South is identical with *saturnana*.—O. G. B.]

Ephippiphora tetragonana bred.—By a lucky chance, this summer, I happened to breed three examples of this rather rare Tortrix, which had hitherto eluded all attempts to discover its earlier stage. Being in want of *Spilonota incarnatana*, I went down to the coast for the larvæ. Unthinkingly, I deferred my visit (as the event proved) too long; as all my supposed *incarnatana* larvæ, and they were not many, emerged as *roborana* to my great annoyance. As a beginner, I also wanted *Bergmanniana*, and duly collected the green larvæ as well. These came out all right; but with them three examples of what I took (at the time) to be *Semasia populana*. Lately, when putting away my year's captures, I had a more careful inspection of these examples, and felt rather in doubt about them. Writing to Mr. Barrett about other matters, I had mentioned the breeding of these *populana* from the rose-feeding larvæ. He then desired to see them, and I sent them, with some other things, and the result was that they proved to be very small examples of *E. tetragonana*. They may have been dwarfed from the supply of food failing, for I took no particular care of them, as I took for granted that they were all the common *Bergmanniana*. No doubt, inland, the food plant will be *Rosa canina*, or whichever species is the common one where the insect occurs. Here, most probably *canina*, as it is our common rose. Next year I hope to make the discovery more complete.—J. SANG, 33, Oxford Street, Darlington: November, 1884.

Occurrence of Sciaphila abrasana.—In August, I happened to take a *Sciaphila*, which, though rather worn, I thought I recognised as *abrasana*. It proves to be really that species. This is a very welcome addition to our list, as one does not add fresh species every year, after a lifetime's collecting in one place.—ID.

Hemerobius inconspicuus, *McLach.*, *bred.*—Last spring, while searching some young Scotch firs for larvæ of *Cedestis farinatella*, &c., I noticed an old exudation of resin on one of the small branches. Fancying it looked as if it had been eaten into, I cut it off and kept it. In due course a specimen of *Retinia pinivoreana* emerged; and, about the same time, four examples of a small Neuropterous insect, which I sent up to Mr. McLachlan in the autumn, and which were promptly returned with the above name. No doubt, the larvæ, wandering away to pupate, had found the resin easy of entrance—thanks to the efforts of *R. pinivoreana*—and availed themselves of it. The species appears not to have been bred before; so that even this casual experience may be of some use to collectors of the Order. It was known to frequent fir trees, but evidently the attachment is intimate, for, no doubt, the larvæ had fed on the *Aphides* of the fir. Mr. McLachlan informs me that it is not yet a common insect.—ID.

Dragon-fly migration.—On September 23rd, 1884, I witnessed a flight of dragon-flies in France on the banks of the Gironde, about seven miles from St. Estèphe. I first noticed it at 5 p.m., and it lasted from 1½ to 1½ hours. The flies were from five to fifteen feet apart, and were taking a steady up-river course, at a height of from ten to fifteen feet above the ground. The width of the flight was about 150 yards. If I may judge from size, there were two species. I managed to catch one of the larger examples, which I have submitted to Mr. McLachlan, who informs me that it is *Æschna mixta* (♂). The weather was fine and warm, but the sky was clouded, and rain had fallen during the day; there was little or no wind.—F. M. CAMPBELL, Rose Hill, Hoddesdon: December 4th, 1884.

Amara fusca at Preston.—During a recent visit to the above town I took a male specimen of *Amara fusca* under rejectamenta by the banks of the river Ribble, and also three *Amara rufocincta*.—R. WILDING, 40, Downing Street, Liverpool: November 20th, 1884.

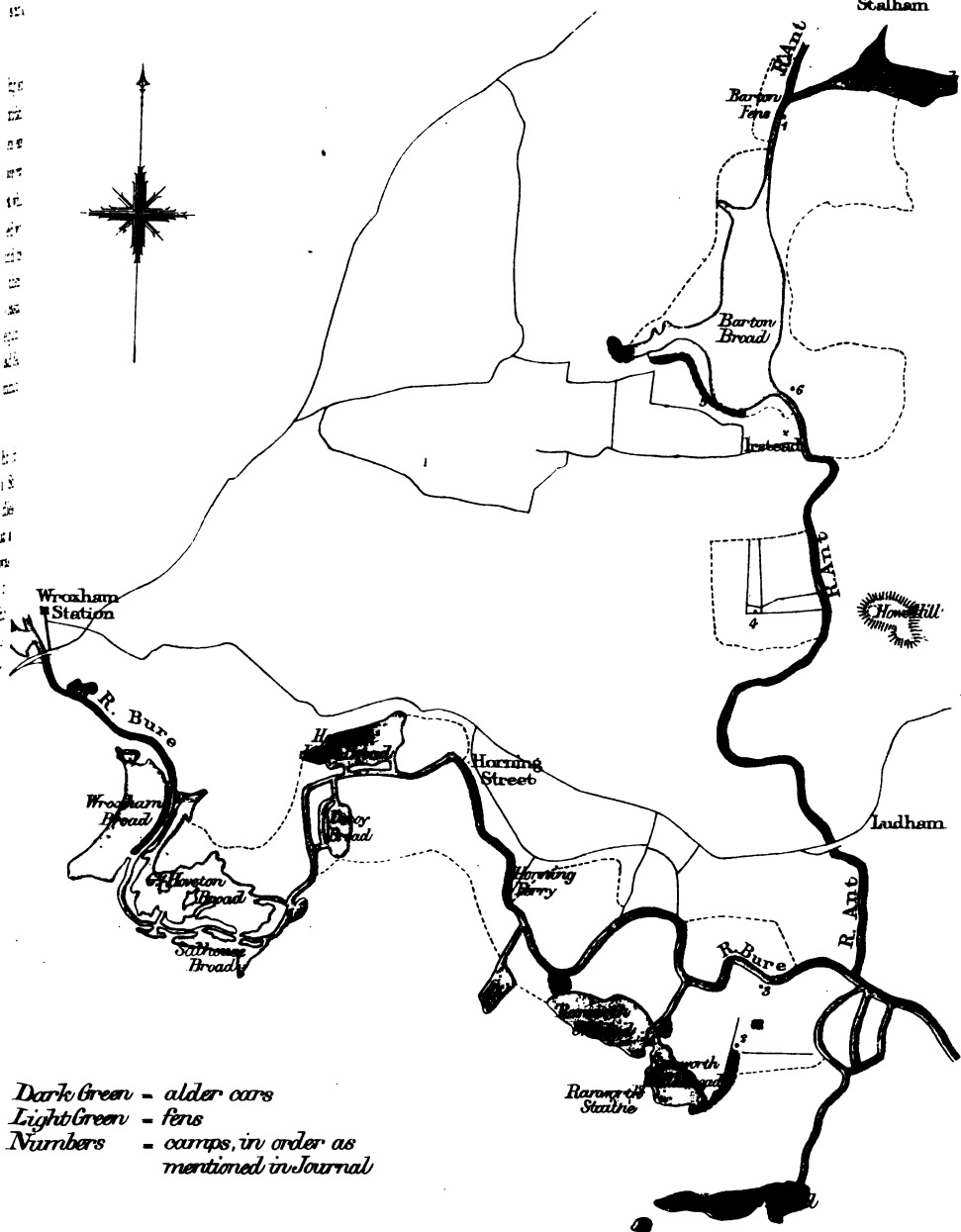
Cymindis vaporariorum at Heswell, Cheshire.—In September, 1883, my friend Mr. Smedley took four specimens of this species under heath in the above locality, and a month ago I had the good fortune to find three more. If we knew the best time of the year to search for it, perhaps we should find it in greater numbers.—ID.

Ocypus fuscatus at West Derby.—I have lately taken eight specimens of this uncommon species in the above locality, and also a fair number of *Philonthus fumigatus*. *O. fuscatus* seems to be pretty generally distributed with us, as it has now been taken in three places, on the east, west, and south of Liverpool, but only in small numbers. *Bembidium 5-striatum*, another good insect, has also turned up in abundance at West Derby this autumn.—ID.

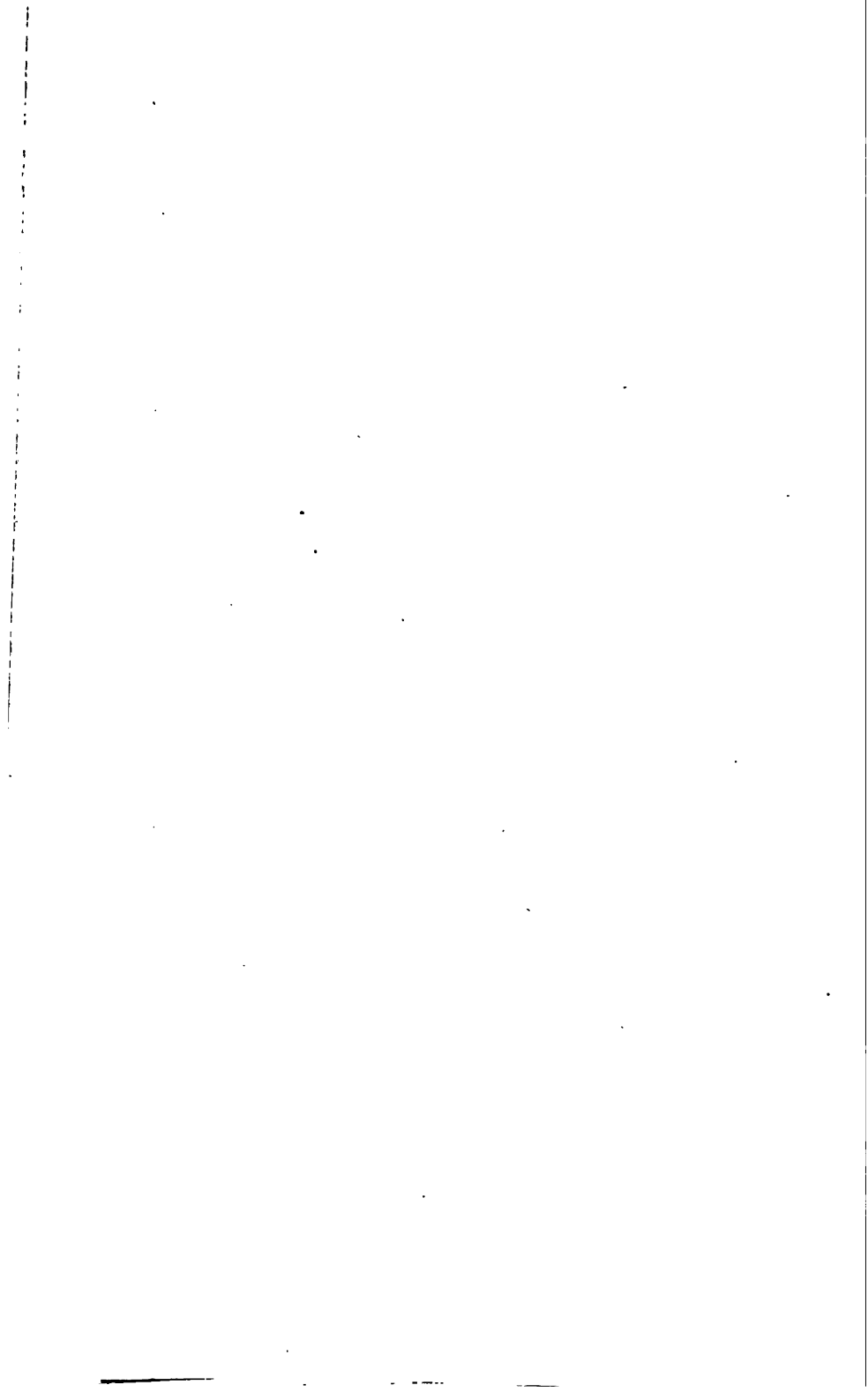
Obituary.

Auguste Chevrolat.—We regret to have to announce the decease of this celebrated French Coleopterist on December 16th, in his 86th year. The information came too late for a detailed notice in this No.

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- Dark Green - alder cars
- Light Green - fens
- Numbers - camps, in order as mentioned in Journal



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PANCALIA LEUWENHOEKELLA AND LATREILLELLA; ARE
THEY THE SEXES OF ONE SPECIES?

BY H. T. STAINTON, F.R.S.

It is so long since I have met with either of these insects, that I am anxious to hear what are the observations of those who have recently taken either of them in any plenty.

It would be especially desirable to hear from any who may have had the good luck to meet with specimens *in copula*.

Thirty years ago, in my volume of the "Insecta Britannica," I assigned to *Latreillella* entirely dark antennæ, without any suggestion of a difference in the sexes; and, in like manner, to *Leuwenhoekella* antennæ with a broad white ring before the apex, again with no allusion to any difference in the sexes.

In the 2nd volume of the "Manual," published five years later (1859), I say of *Latreillella*, "antennæ of the ♂ entirely dark fuscous; of the ♀ with a broad white ring before the tip;" and of *Leuwenhoekella* "the antennæ have a white ring in both sexes."

I have now no recollection whence I obtained the notion that in *Latreillella* the antennæ differed according to the sex.

In Southern Europe a third species occurs, *Pancalia nodosella*, and in that the ♂ has the antennæ entirely dark, but the ♀ shows the white ring before the tip, this white ring being preceded by some long black scales, which cause the antennæ to have a singularly incrassated appearance—as it were knotted—hence *nodosella*.

My excellent friend, Heer P. C. T. Snellen, is of opinion that he meets with this *nodosella* in Holland, always in company with *Latreillella*, of which he thinks it is the female. But, further than this, he thinks that our old friend *Leuwenhoekella*, which we seem to have known from our boyhood, consists only of worn specimens of *nodosella*, of which the thickening scales on the antennæ have vanished whilst the insect was actively on the wing.

Heer Snellen had broached this idea to the late Professor Zeller, who refused to entertain it, saying, "that he had perfect specimens of the ♀, which did not show any traces of the thickening on the antennæ so characteristic of *nodosella*." Heer Snellen, in quoting this to me, appeals to our collections in this country, for he says, "I feel confident that when the English specimens in your cabinets are carefully examined, the justness of my observation will be proved."

My own series of this genus certainly contains no specimens in any way approaching to *nodosella*, though possibly such may lurk

unnoticed in some collections. But I would rather impress upon the attention of our collectors the extreme desirability of hunting about, wherever these insects occur in any plenty, for specimens *in copulâ*, and not only that, but, if possible, to detect a ♀ in the act of ovipositing, so that we may thus obtain some clue to its food plant, of which we are at present quite ignorant.

Whilst not myself prepared to endorse the views which are entertained by Heer Snellen, I think it is only fair to that author to lay them fully before my readers, and I therefore append a translation of his "Note on the European species of the genus *Pancalia*, Stephens," which appeared in the "Tijdschrift voor Entomologie," 1877, pp. 85-89.

"In Herrich-Schäffer's celebrated work on the European *Lepidoptera*, "Systematische Bearbeitung der Schmetterlinge von Europa," V, p. 210, three species of the above-named genus occur. There are no others in the latest Catalogue of Staudinger and Wocke, and in the last part of Heinemann's work on the 'Schmetterlinge Deutschlands und der Schweiz,' brought out in October, 1876, by Dr. Wocke, after the death of von Heinemann, only these three species are mentioned as occurring in the countries of which the author treats.

"Herrich-Schäffer distinguishes the two species which had already long been known (according to him *Lewwenhoeckella*, W. V., and *Latreillella*, Steph.), and which both have dark-margined, golden-brown anterior-wings, with a slender fascia near the base and five marginal streaks silvery, by their size, the darkness of the ground-colour of the anterior-wings, the situation of the hindmost dorsal streak and the antennæ, *Latreillella* being the larger and paler species, with the last dorsal streak somewhat sloping and with the antennæ entirely dark; whereas, in *Lewwenhoeckella*, they have a broad white ring before the tip. He then adds to them a third species, *nodosella*, Mann. (Verh. zool.-bot. Vereins Wien, 1854, p. 586), of which he says, 'Very near *Lewwenhoeckella*; the ground colour of the anterior-wings much darker brown, the silver spots more raised like drops, the small one on the middle of the inner margin wanting, the antennæ thickened beyond the middle with projecting scales, the portion in front of them white at the base.' From Spain and Northern Italy.

"I have not compared Mann's description with that of Herrich-Schäffer, but it is quoted in Stainton's "Tineina of Southern Europe," pp. 107, 116, and 245, and I cannot remember when reading that book to have noticed any difference from Herrich-Schäffer, so that the *nodosella* of the latter and that of Mann may be considered identical.

"Frey, in his 'Tineen und Pterophoren der Schweiz,' p. 166, says,

in reference to the characters of the two older species, that *Leeuwenhoeckella*, with the exception of the white belt on the antennæ, and the rather more stumpy, shorter wings, agrees precisely with the preceding species (*Latreillella*); only, in his diagnosis of *Leeuwenhoeckella*, he mentions that the slender fascia is often interrupted.

"I have not at hand for comparison Stainton's *Insecta Britannica* and *Manual*, but Mr. H. W. de Graaf observes, in the "*Bouwstoffen voor eene Fauna van Nederland*," iii, p. 264, in a note under No. 181, that *Leeuwenhoeckella* is only distinguished by the broad white belt before the tip of the antennæ.

"Von Nolcken, in his '*Lepidopterologische Fauna von Estland, &c.*,' p. 602, goes still further, and maintains that the ♀ *Latreillella* has also the antennæ with a white ring. This opinion seems also to have been shared by von Heinemann, for he only assigns 'entirely dark brown' antennæ to the ♂ *Latreillella*, and says that the antennæ of the ♀ before the tip are whitish, as in both the sexes of *Leeuwenhoeckella*.

"It is thus tolerably difficult to distinguish these two species, and as constant characters there remain merely the stumpier form and smaller size of *Leeuwenhoeckella*, both points which remind one too much of the favourite expressions of the French Entomologists, 'un peu plus' and 'un peu moins,' to raise in our bosoms any great feeling of confidence.

"As to *nodosella*, Heinemann maintains the difference in the structure of the antennæ, but he gives no difference in the colour and markings of the anterior-wings, his diagnoses of the wings of all the species being the same, and he says in all of the silver markings 'drop-shaped.' *Nodosella* in size comes between the other two.

"*Leeuwenhoeckella* had already long been known as indigenous in our country, since it is mentioned in the first part of the *Bouwstoffen*, p. 45. *Latreillella* was added to our lists afterwards, see *Bouwstoffen*, iii, l. c. I had myself only met with this last named species, which occurs in April on the dunes, flying freely by day. Of *Leeuwenhoeckella* I was only acquainted with a very small specimen, brought to me from Switzerland by Dr. Piaget, but had not taken the insect. Never had I expected that the species occurring in Dalmatia, Spain and Italy (see Staudinger and Wocke), *nodosella*, would be met with in this country. I was, therefore, very agreeably surprised to receive from Heer van der Wulp a *Pancalia* with thickened, and, in front of the thickening, broad white antennæ, which I could only refer to *nodosella*, and which, according to the label on the pin, had been taken near the Hague, May 6th, 1865.

"Having no reason to doubt the correctness of the locality indicated by my conscientious and worthy colleague, I had very nearly announced this third species as new for our Fauna, when, by a careful comparison and attentive perusal of the descriptions and notes already mentioned,* a new idea occurred to me, for I began to suspect that in the three species of *Pancalia*, so exactly alike in colour and markings, I had before me merely the two sexes of one species, and that when the loosely-sitting scales which cause the black thickening of the antennæ in *nodosella* get dissipated by the insect being some time on the wing, it sinks into *Leeuwenhoeckella*. The more stumpy form, the protruding ovipositor, and the divided wing-hook showed me that *nodosella* was the ♀, whilst in the specimen of the somewhat more slender *Latreillella* the wing-hook is single.

"My suspicion seemed thus approaching certainty, and was still further confirmed by my finding in April, 1875, on the Wassenaar dunes a beautiful specimen of the ♂ and an equally fine ♀ close together. The phrase used by von Heinemann in reference to *nodosella*, 'angeblich in Nordosten Deutschlands' (alluded to as in the North-East of Germany), now becomes intelligible. We have thus in our (at present sole) European species of *Pancalia* the singular instance of a Lepidopteron, of which the ♀ has the antennæ more ornamented than the ♂, whilst otherwise judging from the instances known to me, the reverse is the case.

"The antennæ of the ♂ are very thick, almost naked, filiform, unicolorous dark bronzy-brown, similar to the palpi, head and thorax; those of the ♀ are thinner, and are well described by Herrich-Schäffer (see under *nodosella*); the palpi, head and thorax rather paler than in the ♀.

"The anterior-wings are very dark orange-brown, with the margins and the base to the fascia black-brown; this fascia, which like the other markings, is finely edged with black on the side towards the base and reddish-silvery, is slightly curved, and may be interrupted in the middle (see Treitschke, ix, 2, 167, *Ecophora Schmidella* and Frey, l. c.). I have no such specimen in my series. At two-fifths of the costa is a straight streak that does not reach half across the wing; opposite to this, but not always (it is entirely wanting in two of my ten specimens), is a small spot on the inner margin. In the caudal hook is a streak either perpendicular, oblique or curved; as a con-

* Excepting the last part of von Heinemann's work, with which I have only become acquainted quite lately.

tinuation of it a fifth streak runs out on the costa, and becomes white in the costal cilia; along the lower half of the hind margin one sees a sixth streak.

"Posterior-wings, all the cilia and under-side very dark grey-brown, rather shining. Abdomen, belly and legs iron-black; the hinder tibiae with two white spots. The head is flat and broad, the thorax compressed, stiffly formed and every thing smooth-scaled; the wings are pointed-lanceolate and have very long cilia.

"In Staudinger and Wocke's Catalogue the species is called *Leuwenhoekella*, and Linnæus is given as the author. According to Werneburg (Schmetterlinge älterer Autoren), Linnæus has first described it in the 2nd edition of the *Fauna Suecica*, No. 1400, under the name of *Loevenhoekella*, but afterwards, in the 12th edition of the *Systema Naturæ*, as *Leuwenhoekella*. If the earlier reference be correct, then would the insect bear the name of *Pancalia Loevenhoekella*, although Linnæus had notoriously wished to name it in honour of our great Antony van Leeuwenhoek.

"So far as I know the larva is still undiscovered.

"The genus *Pancalia* is not yet rich in exotic species. None are yet known to me, and as to the *stellaria* from Bogotà figured in the "Novara Reise," II, 2, pl. 140, f. 10, I should doubt, from the query after the generic name, whether it be truly a *Pancalia*.

"Rotterdam: January 28th, 1877."

DESCRIPTION OF A NEW SPECIES OF *FODINOIDEA* (A GENUS OF MOTHS) FROM THE BETSILEO COUNTRY, MADAGASCAR.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The species here described has long been in the Museum collection; it is allied to *F. Staudingeri*, Saalmüller, and probably also to "*Caryatis*" *rubriceps*, Mabilie.

The genus *Fodinoidea* is referred by Saalmüller to the *Arctiidae*; with which family its colouring and the clothing of the body would incline one to place it: the natural position of the genus is, however, undoubtedly next to *Colbusa euclidica* (a generic form close to *Fodina*) from which it chiefly differs in the greater length of the discoidal cells of the wings, and the more strongly pectinated antennæ of the male; the veins are all similarly emitted from the cells; the palpi, however, are broader, and have a large basal article, the first and second articles being, in fact, of equal size, and the legs are decidedly more slender than in *Colbusa*: the pattern and coloration of the two genera are much the same. *Colbusa* is a West African genus.

FODINOIDEA MACULATA, *sp. n.*

Primaries dark chocolate-brown; a large sub-conical cream-coloured spot near the base of the interno-median area; a rather narrow white band, slightly sinuous towards its anterior extremity, from costa just before apical third to the external angle; secondaries with the basi-abdominal two-thirds bright ochreous, and the externo-apical third dark brown, almost black, the inner edge of this border slightly angular; thorax dark chocolate-brown, the collar carmine-red; abdomen deep rose-red, with a dorsal series of black dots; wings below paler than above; primaries without sub-basal spot, but with the basi-internal area ochreous; palpi carmine, banded with black; pectus rose-red, varied with pale brown; venter pale brown, banded with black and rose-red at the sides. Expanse of wings, 41 mm.

Ankafana (Cowan).

British Museum:

November 28th, 1884.

DESCRIPTION OF A NEW BUTTERFLY FROM MADAGASCAR.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

Whilst re-arranging the Museum series of *Ypthima*, I have come across a Mascarene species, which appears to be undescribed: it may possibly be M. Boisduval's MS. species *Y. corynetes*, with which M. Mabille has compared one of his new forms. A comparative description, when drawn between the species to be indicated and a well-known, or, at least, well-figured species, is in my opinion better than a detailed description; but when, as is the case with M. Mabille's *Y. albivittula*, the comparison is with a mere name, no one can be expected to comprehend it.

Before proceeding to the description of the new species, I may state my conviction that, as the description of *Y. dyscola*, Mab., differs in no particular from typical specimens of *Y. rakoto*, Ward, in our collection, it must surely be the female of that species.

YPTHIMA EXCELLENS, *sp. n.*

Ala supra fuliginosa, rufo-tincta; linea sub-marginali indistincta obscuriore; antica oculo transverse ovali nigro, violaceo bipupillato, fulvo-zonato, sub-apicali; postica ocellis duobus rotundatis minoribus, uno sub-costali, altero inter venas primam et secundum medianus posito, unipupillatis; ala subtus rufo-fusca; antica oculo quam supra majore; alarum disco dilutiore; postica ocellis quam supra majoribus; oculo tertio apud angulum analem minore bipupillato; fascia lata alarum pone medium transiente alba, ocellum secundum fere cingens et pone eum gradatim acuminata; alar. expan., mm. 49.

Ankafana, Betsileo County (Cowan).

Nearest to *Y. niveata*, but the white on the under-surface restricted to a tapering band across the secondaries.

British Museum:

January, 1885.

DESCRIPTION OF A NEW SPECIES OF THE GEOMETRID GENUS
OPHTHALMOPHORA.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

The following species was in a series of moths from Petropolis (Rio Janeiro), recently presented to the British Museum collection by Lord Walsingham.

OPHTHALMOPHORA BRACTEATA, *sp. n.*

Near to *O. corinnaria*, *formosante*, and *bella*, of the same drab colour, but differing from all three in the absence of the white internal border and more acutely produced apex of the primaries; these wings have the costal border creamy-white, and the fringe silvery-white; the secondaries are greyish-white towards the base of the costa; the usual ocellus is large, black, with the centre of embossed silver and the iris of creamy-white; the curved line which partly encircles it is like that of *O. corinnaria*, but more slender, and formed of detached dashes of tarnished silver; there is no second ocellus as in that species and *O. bella*, the fringe is white; the body is grey, the thorax slightly brownish, the frons drab, the collar white; the under-surface is of a pale greyish drab colour, the pectus pearly-whitish.

Expanse of wings, 34 mm.

Petropolis, Rio Janeiro (*H. Doer*).

British Museum:

November 25th, 1884.

ON THE RECENT DISCOVERY OF THE WING OF A COCKROACH
IN ROCKS BELONGING TO THE SILURIAN PERIOD.

BY HERBERT GOSS, F.L.S.

Up to December last the most ancient fossil insects known were the six fragments of *Neuroptera* obtained by Mr. C. F. Hartt, from the Devonian rocks of New Brunswick, which were described by Mr. Scudder, in vols. iv and v of the Geological Magazine, and referred to by me in my paper "On the Insecta of the Devonian Period," in vol. xv of this Magazine.

In the paper just cited, I observed that the appearance of insects on the earth was probably contemporaneous with that of land plants, and as remains of this division of the vegetable kingdom had been discovered in rocks of the Silurian period, the existence of a land flora ages before the date at which the Devonian insects lived was proved; and consequently that the probability of the first appearance of insects at an earlier period than the Devonian might be assumed.

The recent discovery of the wing of a cockroach in rocks c'

Silurian age at Jurques, Calvados, France, no longer leaves the question of the occurrence of insects at an earlier period than the Devonian a matter of uncertainty.

In a note recently communicated by M. Milne-Edwards to the Académie des Sciences of Paris,* M. Charles Brongniart describes the wing of a species of *Blatta* from the Middle Silurian formation of Jurques.

The piece of rock containing this fossil was received from M. Douvillé, Professor in the Paris School of Mines, in whose honour this *the oldest known insect*, has been named *Palæoblattina Douvillei*. M. Brongniart states that the neuration of two species of *Blattida* of the Carboniferous period—*Progonoblattina Fritschii* (Heer) and *Gera-blattina fascigera* (Scudder)†—recalls, in a slight degree, that of this Silurian wing which he describes as follows:—

“ Cette aile, qui mesure 0.035^m de long, a appartenu à un *Blattide*; le champ huméral est large; on y voit la veine humérale supérieure, la veine humérale inférieure qui se bifurque à son extrémité; la veine vitrée ou médiane également divisée en deux rameaux; les veines discoïdales supérieure et inférieure et leurs divisions très obliques qui se rejoignent à leur extrémité, ainsi que cela se voit encore chez certaines Blattes de notre époque; on peut suivre la veine anale qui est assez droite, et s'étend presque jusqu' au bout de l'aile, puis les veines axillaires qui lui sont parallèles. Ce qui est fort remarquable et ce qui distingue cette empreinte de toutes les ailes de Blattes vivantes et fossiles, c'est la longueur de la nervure anale, et le peu de largeur du champ axillaire.”

Although the fossil-wing above described is the only fragment of an insect as yet obtained from rocks of Silurian age, the recent discovery of an insectivorous animal—a fossil Scorpion—in Silurian rocks furnishes additional evidence of the existence of insects at this period.

This Scorpion,‡ which has been described by Dr. Lindström, and named *Palæophonus nuncius*, was obtained from the *Upper* Silurian of the Island of Gotland, whereas the wing of the *Blatta* was, as before stated, obtained from the *Middle* Silurian. This wing is, therefore, of even greater antiquity than the Scorpion, and consequently represents, not only the oldest known insect, but the oldest known *terrestrial* animal.

Surbiton Hill:

January 19th, 1885.

* Comptes Rendus des Séances de l'Académie des Sciences de Paris, No. 26, 29th December, 1884.

† These *Blattida* are referred to in my papers “On the Insecta of the Carboniferous Period,” pp. 169–173 of vol. xv of the Ent. Mo. Mag. (1878), and “The Insect Fauna of the Primary or Palæozoic Period,” in Proceedings of the Geologists' Association, vol. vi, No. 6 (1879).

‡ Comptes Rendus de l'Académie des Sciences de Paris, p. 984, 1st December, 1884, and Annals and Magazine of Natural History, January, 1885.

OLIGOBIELLA, NOVUM GENUS CAPSIDARUM.

DESCRIPSIT O. M. REUTER.

Corpus feminae (mas ignotus) rotundatum, convexum; capite magno et lato, cum oculis levissime transversò, sub-triangulari, ante oculos sensim acuminato, a basi versus apicem sensim leviter sed distinctissime declivi, clypeo angusto, depresso, cum fronte confluyente, basi infra lineam inter bases antennarum ductam posita, vertice medio longitudinaliter sub-impresso, utrinque ad oculum foveola obliqua notato, margine postico leviter arcuato; oculis oblique positis; rostro coxas posticas attingente, crasso, articulo primo medium oculorum attingente, secundo et tertio longitudine æqualibus, quarto brevi, acuminato; antennis mox infra apicem oculorum nonnihil interne insertis, articulo primo apicem capitis paullulum superante, secundo latitudine capitis interoculari vix longiore, duobus ultimis conjunctis duobus primis simul æque longis; pronoto brevi, late trapeziformi, valde transversò, capite fere $\frac{1}{3}$ brevior et apice capiti latitudine æquali, strictura apicali tenuissima, depressa, lateribus rectis, basi tota truncata, disco sub-plano vel levissime convexiusculo, callo utrinque sat magno sed parum elevato; scutello pronoto sat multo brevior; hemielytris totis coriaceis, abdomen totum tegentibus, lateribus late rotundatis, margine tenuissime reflexo; xypho prosterni transversò triangulari, disco angulato-impresso; abdomine sub-orbiculari, terebra feminae medium attingente; coxis anterioribus longis, crassis, anticis basin intermediarum sub-superantibus; pedibus brevibus, femoribus crassis, posticis valde dilatatis, margine antico fortiter convexis, saltatoriis, latitudine vix duplo longioribus, tibiis anticis femoribus fere brevioribus, posterioribus nigro-spinulosis, maculatis, tarsis anticis articulo secundo primo brevior; tertio primo æque longo, posticis articulo tertio secundo paullulum longiore; unguiculis apice curvatis, aroliis latis unguiculis paullo brevioribus, cum iis connexis, solum apice libero.

Genus valde insigne, novam divisionem verisimiliter condens, primo aspectu generi *Myrmedobia*, Baer.; sub-familia *Microphysina*; familia *Anthocoridae*; nonnihil similis, ocellis nullis, capite antice sensim acuminato, clypeo aliter constructo, rostri quadriarticulati articulo primo longo, elongato (ut in *Capsidis*), coxis anterioribus longis, femoribus posticis saltatoriis, tibiis maculatis, tarsis distincte triarticulatis, unguiculis aroliis magnis instructis, structuraque segmentorum genitalium feminae (ut in *Capsidis*) longe divergens. Sine dubio species *Capsidarum*, quamvis a D^o. D^{re}. F. Buchanan White ut generis *Myrmedobia* species descripta.

OLIGOBIELLA FULIGINEA (Buch. White).

Picescenti-nigra, nitidula; antennis pallide et sordide albido-flaventibus, articulo secundo basi medioque picescenti, tertio ipsa basi picea, quarto basi excepta ferrugineo; femoribus piceis vel piceo-nigris, apice eorum, tibiis tarsisque albido-flaventibus, tibiis anticis grisescen-tibus fere unicoloribus, muticis, posterioribus maculis apiceque fuscescenti-bus, sat tenuiter nigro-spinulosis, tarsis articulo ultimo fuscescente.

Long., ♀, $1\frac{1}{2}$ mm.

Myrmedobia fuliginea, Buch. White, Proc. Zool. Soc. of London, 1878, p. 466, ♀, sec. spec. typ.

Patria: Insula Sancta Helena.

Abo: December 18th, 1884.

On the Synonymy of some Pyralidina.—The three following descriptions of *Pyralidina*, published by Zeller in his "Lepidoptera Microptera Caffrariæ" (1852), seem to have been hitherto unidentified: from a careful consideration of them I believe the subjoined identifications to be almost certainly correct: all are common and wide-ranging insects, occurring (without perceptible local variation) not only in the South African region, but also through Ceylon and the Malay Archipelago to the South Pacific Islands.

1. *Eurhyarodes bracteolalis*, Z., Micr. Caffr., 30; *accessalis*, Walk., Brit. Mus. Cat., 405; *stibialis*, Snell, Tijd. v. Ent., 1880, 216, *ibid.*, 1883, Pl. viii, 3. In my notes on the Classification of Australian *Pyralidina* (Trans. Ent. Soc. Lond., 1884), I have erroneously referred this description of Zeller's to the following species.

2. *Molybdantha tricoloralis*, Z., Micr. Caffr., 31; *plumbalis*, Gn., 231; *abnegatalis*, Walk., Brit. Mus. Cat., 404, Ld. Pyr., Pl. xi, 17.

3. *Sameodes cancellalis*, Z., Micr. Caffr., 34; *pipleisalis*, Walk., Brit. Mus. Cat., 420; *lepidalis*, *ibid.*, 465; *sidealis*, *ibid.*, 937; *meridionalis*, *ibid.*, Suppl., 1314; *trithyralis*, Snell, Tijd. v. Ent., 1880, 218, *ibid.*, 1883, Pl. viii, 4; *vespertinalis*, Saalm., Ber. Senck. Ges., 1880, 301. In the case of this species, although Zeller included it in *Botys*, he has accurately pointed out the structural characters on which the genus *Sameodes* is now established.

Lederer refers (conjecturally) to the first two of these descriptions under *Diasemia*, and to the third under *Cacographis*.—E. MEYRICK, Sydney, N.S.W.: Nov. 19th, 1884.

Reported occurrence of Danais Archippus at Ventnor.—A little time ago a newspaper boy told me that he had caught a butterfly which he did not know as he does not collect. A few days ago I saw it and found it to be a good specimen of *Danais Archippus*. I bought it from him, and showed it to Major Owen who lives here. He thinks it is a genuine English one, for if the boy knew it was rare, he would have asked a higher price. He caught it on September 12th, on the Red Valerian not far from Major Owen's house.—DUDLEY WESTROPP, St. Maur, Ventnor, I. of Wight: Dec. 29th, 1884.

Description of the larva of Argyresthia Gædartella, with notes on the larva of A. Brockeella and another catkin feeder.—On the 2nd of February last, a fine sunny afternoon for the time of year, while strolling across a Norfolk fen, and seeking anything entomological on which I could lay my hands, I turned my eyes to the pendulous catkins of the birch, thinking, as I had several times before thought, that there ought to be something feeding in them, when I saw a larva hanging by its silken thread from a birch twig, and slowly lowering itself to the ground. That larva did not reach the ground, a box intercepted its descent, and soon after it found itself in a glass bottle with some sand in the bottom. It acquiesced in the condition of affairs, and the same evening began forming in the sand a white silken cocoon attached to the side of the bottle. To interrupt the course of my narrative, I may say that at the beginning of June that larva produced a fine specimen of *A. Brockeella*. Having thus discovered "when to look," and "what to look for," and having ascertained from Mr. Barrett that little was known of the catkin feeders, I returned to the search, about a week after I had found the first larva. Half-an-hour passed without my finding anything, and I was beginning to think that my surmise of the creature being a catkin feeder was wrong, when I saw a catkin which had lost its end, thus exposing a hole in the remaining portion, and in the hole I could see a larva move. This gave me the hint where to look, and I quickly gathered several catkins which had lost their ends, or had the end smaller than the rest of the catkin. On examining these at home, there was scarcely one but was or had been tenanted by a larva. Only a few of the larvæ were full-fed, and several of these I killed in attempting to see them. These were like the one I had first found, and I put some aside to write a description from by daylight, but before I had an opportunity of doing so, half had begun to spin up. The smaller larvæ, which were more abundant, I assumed to be the same in a less advanced condition, but my supposition was wrong. The next convenient opportunity I had, I visited some alders, and on examining the male catkins of these, I found them containing a handsome pink larva, in some instances then full grown, and which ultimately produced *A. Gædartella*. I also examined the nut catkins, and found they contained rather plentifully a small green larva, with the head and 2nd segment black. (These, I regret to say, I have hitherto been unable to rear.) At the middle of February, when first found it, it was not more than a quarter of an inch in length. By about the second week in March, the small larvæ in the birch catkins were so fully grown, that I could see they were the same as those in the alder, that is *Gædartella*. Throughout March I may safely say that I found this larva on every birch and alder that I examined: it really appeared most abundant. Towards the end of this month, the green larva which I had found in the nut catkins showed itself abundantly in the glasses in which I had put the alder catkins gathered for the larva of *A. Gædartella*. This green larva, however, grew very slowly, and by the middle of April was scarcely larger than when I first found it. As the nut and alder catkins had by this time almost passed flowering, and the larva did not appear to care for the catkins, when grown so much that the anthers had separated, and there was, therefore, not sufficient substance to conceal itself, I imagined it must have another course on its *menu*. On examining the unopened buds of the alder, I found my suspicion to be correct, for the larva, now nearly full-grown, was clearing out the buds, and leaving empty the unopened sheaths of the bud, which afforded it a hiding place until it moved to

the next it could find. Unfortunately, I was unable to breed this larva, as I could not satisfy its requirement with regard to a suitable pupating place. I had had difficulty with it in keeping it on its food when young, but I circumvented it in this respect by hanging the catkins in bunches by a thread in a glass jar. They remained on and in the catkin so long as it was fresh, and when I found them off, I renewed the catkins and put them on again. Afterwards, when I found them in greater plenty, I let them take their chance rather more. When full-fed, I put about a dozen into a glass with some sand, to be certain that I had one kind of larva only; but on looking at them again, they were in a bleeding condition, and nearly dead. Thinking something injurious had been left in the glass, I selected a lot more larvae and put them in a box. These suffered the same fate as the others, and I could see that it was from their exertions to get between the lid and side of the box.

The larva of *A. Brockeella* has not the spotted appearance of that of *Gedartella*, also more attenuate, and has the habit, when still, of contracting itself, which gives it a still more swollen appearance about the centre. It is about the colour of the larva of *Cossus ligniperda*, but rather less bright in appearance, being pinkish-brown on the back, not extending to the 3rd segment, and pale dusky flesh-colour underneath, and in the incisions of the segments. The spiracles are very minute and faintly darker; immediately above them is a rather large brown spot. The spots are all shining brown, unicolorous; and are scarcely distinguishable, especially the sub-dorsal ones, unless examined with a pocket lens. Anterior-legs blackish-brown; head brown, lighter towards the front; plate on 2nd segment blackish-brown on the posterior-edge, and on either side of the very narrow whitish dorsal line, which line is, however, only visible on the 2nd segment. On the anal segment there is no indication of a plate, excepting a few shining spots of the ground colour, which is rather more inclined to greenish than the other part of the larva. The anal segment of the larva projecting from a hole in an alder catkin would thus assimilate with the slightly projecting rugosities of the surface of the catkin. When feeding in a catkin, the larva crawls backward to the orifice to eject its frass, on arriving at the opening the frass is partly extruded from the body; the anal segment is then raised and protruded slightly from the catkin, and the frass shot forth like a pellet from a popgun. This I saw done several times, and I particularly noticed it, as it resolved what had been a problem in my mind, for I had noticed that when a catkin with an almost full-grown larva in it was lying in the bottom of the glass with the orifice by which the larva had entered upwards, the frass was, nevertheless, about the bottom of the glass. Common sense told me it would fall out if the catkin were pendulous on a tree, with the hole downwards, but another explanation was needed when the catkin was kept laid so that the hole was uppermost, and this explanation the creature supplied in the manner described. When the larva is eating into a fresh catkin, with, perhaps, only the head or half the body buried, it partially protrudes the frass, then raises about the last five segments into the position of the head and front segments of a sphinx larva in repose, and the frass is shot away. I have seen it shot as much as a foot from the larva, so that the tiny creature must use considerable projective force.

The larva no doubt descends to the earth to pupate. Mine have all formed a white silken cocoon with pointed ends beneath the sand, but attached to the side of the bottle in which they were placed. The pupa, when it first changes, is delicate

pink, with the head and wing-cases amber coloured, and a small black oblique spot in the position of the eye. It afterwards changes to an uniform light brown.

The larva of *A. Gadartella*, when full-grown, is about five-eighths of an inch long, and of uniform substance throughout (in which respect it differs from *Brockesella*, which is attenuate, especially posteriorly); it is pinkish flesh colour, distinctly pink in incisions of segments, and studded with whitish raised dots, with a minute black centre and short hair. The spiracles are distinct, and almost as large as the spots. The spots and the spiracle appear as a band of four spots on each segment, and give the larva the appearance, when looked at on one side, of being banded with spots parallel with the pink incisions of the segments. When looked at from the top, the sub-dorsal bands of spots give it the appearance of being banded along the length of the larva. Head and posterior margin of plate on second segment brownish. Anal plate also brownish, with a horse-shoe shaped mark on the upper part. The lower portion forms a slight point; the general shape and colour of the anal plate is the shape and colour of one of the scales in a birch catkin. When a larva attacks a fresh catkin, it invariably begins near the bottom of the catkin, and eats in and upward. When, therefore, the larva has almost got into the catkin, the projecting portion, that is, the anal plate, is in the same direction as the scales of the catkin. This assimilation is sometimes of a most remarkable character. The hole which the larva makes being very small externally, the larva has to use considerable exertion to squeeze itself in; this has the result of forcing from the anal segment a portion which appears as a little round pinkish knob, exactly similar in appearance to the little pinkish knobs under—that is, near—the scales of the catkin, when the catkin is in a condition to separate just previously to the anthers showing. The two projecting hind feet of the larva have the appearance of, and are in the relative position of the incipient anthers, and complete a most marvellous piece of assimilation. Seen like this, it would be impossible to detect the departing larva from the surrounding catkin, but having disturbed a larva, I was fortunate in watching it get back into its catkin. It took ten minutes or a quarter of an hour to contort itself into the hole, and I at first thought the projection from its body was due to its having injured itself by its exertions, but I afterwards saw that it was all right. Subsequently, I saw other larvæ crawl into other holes with precisely similar results. The head and anal plate are rather lighter brown after the last moult than previously. The larva when young appears carefully to avoid eating the mid-stalk of the catkin, to which the stamens are attached, so that the catkin, although it decays where eaten, does not fall off, and thus affords a secure hiding place should cold weather intervene, when it is probable the larva stops feeding, as the state of growth of the catkin appears to be arrested. When the larva visits a fresh catkin, the hole by which it has entered may be seen, and also, if it has left, the hole by which it left, which is generally near the footstalk of the catkin. Catkins which have been eaten by full-grown larvæ, especially those of the alder, are not much more than shells, and a good strong wind will blow them away, leaving but a small piece on the footstalk. The larva feeding on alder are generally rather darker and richer coloured than those on birch, and also several weeks earlier in their growth. This is probably due to early hatched moths selecting trees upon which the catkins, then in quite an immature state, had begun to show, and in this respect alder is rather in advance of birch.

When full-fed, the larva leaves the catkin, and makes a white cocoon, in which it changes to pupa. I imagine that naturally the cocoon is placed in a crack on the bark of the tree. I have not been able to supply it with anything which has seemed congenial to it, for when it wants to change it ascends: if in a bottle, it will crawl about the top; if the bottle is corked, it will most likely eat into or up the end of the cork. The plan which I found most successful was when the larvæ were nearly full-fed, to tie the catkins up in a small linen bag, or piece of rag, and hang it up. The larvæ would then spin up in the folds of the rag near the top. It is better to leave them alone until the moths are expected, when the string may be untied, and a small piece of rag cut out with each cocoon attached. These can then be placed in a covered jar, or something convenient to observe when the moths emerge.

These notes are not so complete as I might be able to make them next year, but they may be of use to those who wish to breed the insects. At the time I began writing them out, I thought it would be another year before I could obtain any further information on the subject, but on visiting some alders on the 9th of November, I found the catkins already eaten. In the few catkins I took home, I found I had three full-grown larvæ, which I have scarcely a doubt are *Brockeella*. These all spun up in the course of the next week. A week later I got more larvæ, all were full-fed. This spring I only found *Brockeella* on birch, but if I am correct in remembrance of the larva, it is, therefore, also an alder-feeder, and, like *Gædartaella*, the individuals on alder are earlier than those on birch. From an examination of a number of bunches of catkins, I imagine each larva requires three or four catkins to complete its growth. On the 9th of November, when I first got them, they were very active and eating voraciously. A change to colder weather made them as sluggish as the specimens I found in the birch in February. At present I cannot find anything in the birch catkins, but quite a small larva, which I believe to be quite an early stage of *A. Gædartaella*.—ALFRED BALDING, Wisbech: Nov. 21st, 1884.

Coleophora vibicigerella.—During last autumn I collected on the Essex salt-marshes about 30 cases of a *Coleophora*, which I am strongly inclined to believe produce the above species; it is a long curved black case, rather flattish, about 6 lines in length at present, the upper half of the case thin and narrow, and the lower half very much bellied, in general appearance resembling the small cases of *C. conspicuella*, but rather thinner and longer; they were feeding on *Artemisia maritima*, and are exceedingly local; I only found them in one particular spot, although I searched many other places in the immediate vicinity for them. I found four or five of these same cases in the autumn of 1883, but forgetting all about them the following spring they of course died through wanting the necessary food, but this year I hope to give a more satisfactory account of the larva which I have at present hibernating.

I also found at the same time and place a few cases of a *Coleophora*, in shape like *paripenella*, but of a very light colour and a little larger, they also were feeding on *Artemisia maritima*, what they are, or whether they will prove to be new, remains to be seen, they are at present fastened to the gauze-top of the cage, but the long thin black cases are all fixed to the main stems of the food-plant.—Geo. ELISHA, Shepherdes Walk, City Road, N.: January, 1885.

Additions, &c., to the Lepidoptera of Pembrokeshire.—Having just seen the list of Pembrokeshire *Lepidoptera* in the "Tenby Guide," I have been comparing it with some captures of my own within the past season.

The following species are not mentioned in the list in question.

Spilosoma urticae.—Larvæ very abundant at Kingsmoor (and very unhealthy). On September 3rd or 4th I was on a part of the Moor of a fenny character, covered with *Iris*, *Sparganium*, &c., in fact, just like an ordinary fen, when I found two larvæ on a grass stalk. When closely examined they proved to be merely dead flaccid skins. I went on searching and took about three dozen living larvæ, and saw about half that number dead; all were nearly full grown, and were found on *Iris*, *Pedicularis*, *Trifolium*, and chiefly on *Mentha aquatica*. The live ones were most commonly found low down on plants overhanging the wet holes and ditches. The next day five died; they were well supplied with *Mentha* from another place. They would crawl to the top of the box, looking apparently well, would then void a little liquid frass, and die in an hour or two. After the first day or two the deaths diminished to about two a day. Subsequently I brought home about four dozen more, with a like result. Altogether about two-thirds died, and the rest spun up. Here fresh deaths occurred, for some died in the cocoon without pupating. The result is that I have only sixteen pupæ.

Ennomos erosaria.—One specimen flew to my sugaring lamp in Road Wood.

Ephyra porata.—Road Wood, scarce.

Thera firmata.—Among fir, not common, Road Wood.

Noctua Dahlii.—At sugar at the same Wood.

Stilbia anomala.—My father first took it flying at dusk in an open copse full of oak bushes and very young larches, near the same Wood. Others I took on a long piece of undercliff in the parish of Amroth, where it is exceedingly rough and rocky, with masses of broom growing. The first *anomala* flew up at my approach, and I beat others out of the grass, but missed most of them from the roughness of the place. *Anaitis plagiata*, which was also there, was confusingly like it. This locality is almost impossible by day, quite so at night.

Besides these I have found *Nonagria despecta* abundant on the Kingsmoor. It began to fly at sunset, and then on to 9 or 9.30 p.m. *Phibalapteryx lignata* was also abundant, and *Orthotalia sparganiella* common. *Diasemia literalis* occurred in low pastures near Wiseman's Bridge and Saundersfoot, but never commonly, and I found *Platyptilia isodactylus* close to Saundersfoot. I have found *Dianthæcia* larvæ very common, mainly (if I may trust the description) those of *capsophila*. I believe that some of these must be of a second brood, as I had some unchanged well into October. There are certainly two other species.

In the Woods, besides *Noctua Dahlii*, *N. neglecta*, *Agrotis saucia*, *Triphana fimbria*, and other species were taken at sugar, and *Emmelesia unifasciata*, *E. affinitata*, *Eupithecia virgaureata*, *E. subfulvata*, *Cidaria silacea*, and *Botys arinalis*, have occurred in greater or less numbers.—W. F. H. BLANDFORD, Trinity College, Cambridge: November 3rd, 1884.

Further notes on British Pterophoridae.—As the habits of several "Plumes" (in addition to *Pterophorus gonodactylus* alluded to in the Ent. Mo. Mag. for December last), in this district evidently differ a little from those of their brethren in other, or at any, rate in southern localities, a few notes on them may not be without interest.

In the first place, the larva of *Pterophorus monodactylus* is supposed, so far as I know, to be solely a convolvulus feeder; but here, though it is common enough, I can only rely on finding it among ling (*Calluna vulgaris*), or bilberry. It occurs freely in September on the high bleak exposed moors, always about ling or bilberry (but where convolvulus certainly does not grow), and there is no doubt it feeds on either or both of these plants. I have sometimes tried to make another species out of it; and as there were, and I suppose still are, two specimens without label, at the foot of the series of *monodactylus* in the Doubleday collection at Bethnal Green, of one of our moorland forms, it is evident the late Henry Doubleday was a little doubtful about them. As, however, the variety occurs with all the ordinary well known forms of the species, they are clearly only *monodactylus*.

Pterophorus acanthodactylus too, though a rare species here, I have never seen except among ling. Its best known food plants are *Ononis arvensis* and *Stachys sylvatica*, on both of which it is common in many places, but although we have a little of the former, and the latter in abundance, I have never seen a specimen of the moth about either plant. It does not, like *monodactylus*, occur on high bleak moors, but in woods having an under-growth of ling, but still quite away from either of the two well known food plants.

A larva which has completely baffled all my attempts to find it, is that of *Pterophorus bipunctidactylus*. The imago abounds among *Scabiosa* in some old rough fields here, and is on the wing continuously from June until October. Mr. W. Warren informs me he finds the larvæ of the early summer moths feeding in the autumn, in the flowers of *Scabiosa*, on sunny afternoons some of the larvæ coming outside the flowers, and being exposed should of course then be easily seen. And Mr. C. G. Barrett, if I remember rightly, told me he had found larvæ of the later moths feeding in the stems of *Scabiosa*, before the time for the flowers to appear; but although I have searched season after season, at all parts of the year from May to September, and Mr. S. L. Mosley of this town has also worked diligently at different times of the year for it, neither of us has ever been able to detect a trace of the larva in any part of the plant. If any Lepidopterist who knows how to find it will, in the coming season, send me a larva of either or both broods feeding *in situ*, I shall be most grateful.—Geo. T. PORRITT, Huddersfield: January 5th, 1885.

Insect Migration.—Mr. Cockerell's remarks in reference to this subject (*ante* p. 159) remind me of my experience of *Nomophila noctuella* (*Stenopteryx hybridalis*) in North Devonshire this year. I did not see a specimen of this species anywhere in the neighbourhood of Lynmouth before July 4th. On that date it was found in considerable numbers in a rough field some 800 feet above sea level. I captured many examples but retained very few, as the condition of the specimens was not altogether good. In the course of the next few days *N. noctuella* was to be met with here and there all over the district, but in the field where I first noticed it in abundance, very few were to be found. I had worked in the rough field during the previous week, June 25th, 26th, and 27th, for *Orthotania striana*. The weather at that time was fine but cold for the time of year, with easterly or north-easterly winds. If *N. noctuella* had been there and on the move either of those days I must have seen it. I am inclined to think that there were no *N. noctuella* in the field at the

time of my earlier visits, and that the abundance of the insect there on July 4th was due to the fact that it had recently migrated thither. Whence it came I cannot say.

Another conclusion suggests itself, but it is one I cannot adopt. The weather on June 28th, 29th, and 30th was dull but warm, with occasional showers from the south-west. July 1st and 2nd were both beautiful days, with a scorching sun and a balmy westerly breeze. On July 3rd there were some showers and distant thunder in the morning, the afternoon and evening were dull and close. Now *N. noctuella* may have been among the herbage, in the field referred to, at the time of my first visit, but owing to the cold easterly winds, was lethargic and not to be disturbed. The rain and higher temperature between June 28th and July 4th may have rendered them active. As I have just stated, I cannot accept this view of the case, because, for one thing, *N. noctuella* is not usually rendered inactive by a low temperature. I have seen it darting from under my feet, when walking in the New Forest, on a very cold afternoon in September.

I had not intended saying anything further upon migration of insects, but now that I have my pen in hand I feel impelled to add a few other remarks.

A somewhat remarkable occurrence witnessed by me in the Isle of Wight in the year 1879, and briefly recorded in the "Entomologist," 1880, has, I think, some bearing on the subject of insect migration, and for this reason I venture to again present the facts to the notice of Entomologists.

Plusia gamma was more numerous than usual at Ventnor in the early summer months of 1879. Larvæ of the species were also very frequently observed during the summer in many places, especially on the downs, feeding on various plants. In August *P. gamma* was exceedingly abundant everywhere in the district.

The peculiar circumstance, however, to which I would refer, occurred to me on Sunday evening, August 10th, when I was walking over the downs on the west side of the town. The day had been hot, and the evening was calm and sultry, not a breath of wind from any quarter. The condition of the atmosphere indicated a thunderstorm near at hand, and this prediction was verified during the night. As I proceeded along the crest of the down I noticed a moth soaring upwards; whilst watching it I observed others ascending. All were towering upwards in a spiral flight, and as the light was fast declining they were soon lost to view. Looking downwards I perceived numerous other moths around me starting out of the furze, &c.; these also winged their way aloft. As I was without a net I was unable to capture specimens, although I endeavoured to do so without that indispensable article. I cannot, therefore, say positively that the moths were *Plusia gamma*, but the known abundance of this species in the locality, together with the fact that the size and shape of the insects seen were so suggestive of *P. gamma*, induce me to think that they were no other than that species. It is also a noteworthy fact that although *P. gamma* was to be met with not uncommonly after August 10th, it was not again seen in the immense numbers observed during the week immediately preceding that date.

If I had only seen a few moths flying in the manner described I should, probably, have paid but little attention to the matter. But seeing so many around me adopting precisely the same tactics led me to attach some importance to their manœuvres, though I failed at the time to comprehend the object of their concerted movement.

During the past five years, that is, ever since the event came under my observation, I have frequently thought over the matter and endeavoured to analyze the circumstances connected therewith.

The only conclusion that I can arrive at is that the movement I saw among certain moths (presumably *P. gamma*) on the evening of August 10th, was connected with the migration of those insects from their breeding ground in the vicinity of Ventnor. As the air near the earth was at the time perfectly calm, and as the moths rose upwards without apparent inclination toward any particular point during the time they remained within sight, it is not possible to say what course they eventually took. It occurs to me that the direction of their (migratory) flight would probably have been influenced by any current of air they might have reached in their ascension.

The spiral ascension of the moths could not have been due to accidental causes, and, therefore, of an involuntary character. If the air had been in a disturbed condition, I should have supposed that the action of the moths was influenced thereby, but as the air was absolutely still, I cannot but conclude that the peculiar upward movement of the moths was quite voluntary and, in fact, the initial stage of subsequent migration. Again, the movement was evidently a simultaneous one of a large number of moths and not confined to a few individuals only. This fact would seem to imply that the insects were actuated by a common influence, to seek the regions of the upper air.

Plusia gamma is always present in greater or lesser abundance in Britain. Its numerical increase or decrease is without doubt (in common with that of most *Lepidoptera*) regulated, to a very great extent, by meteorological or climatic influences. The wet and almost sunless summer of 1879 may have been favourable to the propagation of *P. gamma*, but unless the normal numbers of the species were largely augmented by immigrants during the early summer months, I cannot think it would have occurred in such swarms as were observed in August of that year in the Isle of Wight and elsewhere.

That several species of *Lepidoptera* do migrate is beyond contradiction, but whether such migration is habitual with those species, or not, there is no evidence to show. It has been suggested that the extensive geographical range of some species is due to their occasional migrating from place to place. I consider this not only possible but most probable, and I should suppose that such species possess inherent migratory instinct. Probably the instinct is either excited into activity or kept in abeyance by meteorological influence.

As far as concerns Britain, I am of opinion that unless there were occasional immigration of such species as *Colias Hyale*, *Colias Edusa*, *Vanessa Antiopa*, *Sphinx convolvuli* and several others, British collectors would not have the felicity of taking those species in any part of this country. I do not go so far as to say that none of the species specially referred to ever breed in Britain; on the contrary, I admit that they often do so (more rarely perhaps in the case of *V. Antiopa*). Still I think that the peculiarities of our insular climate render the permanent establishment of those species, and certain others, improbable.

Suppose that in any year a number of immigrant *Colias Edusa* arrived on the eastern or south-eastern coast of Britain; during the month of June for instance. These immigrants would, most probably, in the course of a few days distribute themselves throughout the length and breadth of the land, and the females would in due

course deposit eggs in suitable places. Now, if the general character of the weather were favourable during the following summer and autumn, descendants of the immigrants would occur, in more or less abundance, in many localities where perhaps the species had not been seen for very many years. I have put this forward as a supposed case, but I am aware that touching the abnormal abundance of certain species of *Lepidoptera* in certain years in Britain, many Entomologists are in favour of the immigration solution of the problem. I cannot see in what other way we can reasonably account for the erratic appearance of such species as I have mentioned, and some others.—RICHARD SOUTH, 12, Abbey Gardens, London, N.W.; December 9th, 1884.

Note on Oviposition in Agrion.—The following observation appears worthy of being recorded. In several localities in Savoy, in July last, *Agrion mercuriale* (a very local British species) was the commonest of the smaller *Agrionidae*. The weather was, and had been, intensely hot, and the breeding places of the *Agrion*, consisting mainly of shallow road-side ditches and streams, were nearly dried up, leaving only, here and there, patches of wet mud with scarcely any surface water. I soon noticed that certain individual *Agrions*, when flying, were conspicuous on account of the whitish colour of the whole, or a portion, of the abdomen. On examination these proved to be always females, and the whitish colour due to an incrustation of dry mud; in some it was only at the tip of the abdomen, in others for its whole length (nearly an inch). The explanation was obvious. These females had been engaged in oviposition, and some instinct had prompted them to sink their eggs as deeply as possible in the mud, so as to afford some chance of escape from the consequences of further evaporation. I am not aware that *A. mercuriale* (or its near allies) has ever been noticed to descend entirely beneath the surface of the water: in this case such a proceeding would have been impossible.—R. McLACHLAN, Lewisham: December, 1884.

Additional notes on Coleoptera in 1884.—In addition to several species already recorded, I have met with a few *Coleoptera* during the past season which may be deemed worthy of mention.

At Dulwich my best captures have been *Callicerus rigidicornis*, *Bolitochara bella* (commonly), *Homalota nigricornis* and *hospita* (from *Cossus* burrows), *Coryphium angusticolle*, *Epuræa melina* (*Cossus*), *Megatoma undata*, *Cis micans* and *vestitus*, and *Balaninus tessellatus*. From powdery fungus on decaying birch stumps I took, one afternoon, nearly 200 specimens of *Lathridius testaceus*. *Phloeotrya Stephensi* was also common in nearly every birch log which I examined, but in every case the insects were dead and decayed. As far as I could judge the beetles had never left the logs, some unknown cause having brought about their death almost immediately upon assuming the perfect form.

From West Wickham and the surrounding district I may record *Bolitochara lucida*, *Leptusa ruficollis* (plentiful in *Boleti*), *Tachinus elongatus*, *Homalium iopteronum*, *Prognatha quadricorne* (plentiful, but all ♀ specimens), *Scaphidium 4-maculatum*, *Orthoperus brunneipes* (*Boleti*, common), *Epuræa longula* (*Cossus*), *Meligethes ovatus*, *Cryptophagus badius*, *Megatoma*, *Cis bidentatus* and *nitidus*, *Ennearthron cornutum* (in profusion), *Heledona agaricicola* (50, from white fungus upon oak) and *Sibynus potentilla*.

From Bognor, where I spent a week early in April, I obtained *Corylophus sublaevipennis* (three specimens, named for me by the Rev. A. Matthews), *Achenium depressum* (somewhat commonly), *Cassida nobilis*, and several local aquatic species. A small patch of sand at the base of Selsea Bill produced *Phytorus spinifer* and *Ptenidium punctatum* in abundance. *Bryaxis Helferi* was in thousands upon the sea-wall during almost every hour of sunshine, in company with various *Corticaria*, &c.

Among some odds and ends, taken principally by desultory collecting, were *Orectochilus*, *Ceuthorrhynchus cochlearia*, *Phytobius velatus*, and *P. leucogaster*, from Aylsham, Norfolk; and *Platyderus*, *Scaphidium*, and *Geotrupes pyrenaeus* from Belvedere, Kent. I suspect that *P. velatus* is often overlooked. I took it by dragging aquatic plants, and found that in every instance it remained motionless in the net for several minutes, its sombre hues rendering it very difficult to distinguish among the *débris*.

I may mention that, since my former note (*cf. ante* p. 129) I have again met with *Cis bilamellatus*, and, on this occasion, at some little distance from West Wickham. The insect appears to be, at any rate locally, abundant.—THEODORA WOOD, 5, Selwyn Terrace, Upper Norwood: December 3rd, 1884.

Note on Barypeithes brunnipes, Ol.—I am unable to find any record of this insect as a destructive species, and suppose that it has been overlooked. I have found it very commonly in strawberry beds, and, upon one occasion, in June, 1882, every fourth or fifth berry was more or less destroyed by the insect. In almost every case it seemed to enter the berry from beneath, creeping under it as it rested on the ground, and then tunnelling upwards. In the same way I found a single specimen of *Pterostichus madidus*, which appeared to have eaten away the whole of the interior of a large strawberry, nothing but a thin shell remaining.—ID.

Coleoptera in mid-winter.—On December 20th, I went for my holiday to Culross, on the northern bank of the Forth. The weather report from there the week previous was nothing but rain, therefore, I hoped to be able to collect beetles, and to find some remaining fungi. Great was my disappointment on arrival—hard frost. No use turning stones, moss and bark frozen hard, even haystacks would not yield beetles, the cold driving them too far in. I was determined not to return empty-handed and my only chance was a running stream which separates Fife from the curiously divided county of Perth; it was bitterly cold work pulling stones out of the water and searching them. I could only work about an hour at a time, and had three hours at it, with the following result:—4 *Hydrena gracilis*, 5 *H. nigrita*, 1 *Elmis aeneus*, 10 *E. Volkmar*, 1 *E. parallelopipedus*, 1 *Limnius tuberculatus*. The *E. Volkmar* were most difficult to find as they were apparently grown over by a kind of green slime.

On pulling the stones out of the water I placed them on end, and patiently waited for the slightest movement, then I knew I might expect one or other species; the *Hydrena* were difficult to get from the stones, they clung most tenaciously and often lost a limb on being captured.

I found most under the stones piled across the stream partially out of the water, and where as a consequence the water runs more rapidly.—ALFRED BEAUMONT, 80, Ladywell Park, Lewisham: Jan. 3rd, 1885.

THE *NITIDULIDÆ* OF GREAT BRITAIN.

BY REV. W. W. FOWLER, M.A., F.L.S.

(Continued from p. 147).

MELIGETHES, Kirby.

This genus of the *Nitidulidæ* is by far the largest in point of numbers; some of the species are easily separated, but many are very difficult to determine with accuracy, and probably several of our British species will in time be considered as not really distinct; the denticulate anterior tibiæ, taken in conjunction with the produced prosternum, serve to mark the genus. The head is small and triangular; the mentum is composed of two pieces closely joined together; I have dissected it out in many of our species and find considerable variation; it is contracted in front and deeply emarginate, with a larger or smaller tooth in the middle of the emargination, which sometimes is almost, if not totally, absent; the mandibles are short, rather broad, but sharp, furnished with one or two small inconspicuous teeth near the apex; they project slightly beyond the labrum, which is strongly bilobed; the labial palpi are thick and short, with the last joint broadly truncate; the maxillary palpi are longer and more slender in comparison, with the last joint truncate at the extreme apex; the antennæ are short, with the first joint considerably thickened, and end in a compact round three-jointed club; the antennal furrows on the under-side of the head are well marked, straight and parallel; the thorax is always transverse, sometimes very strongly (as in *M. picipes*), at other times slightly (as in *M. nanus*); the body, as a whole, is subquadrate, or more or less ovate; the abdomen has its first free segment as long as the three following, which are of equal length; the fifth segment is longer, and is furnished with two rounded impressions, which approach one another towards the apex of the segment, and occasionally meet; although they differ somewhat in different species, yet they are not very useful as a character; the last segment of the abdomen also often presents depressions, tubercles, or raised keels at its apex, especially in the males, which are very useful marks of distinction, and there are also varying depressions and prominences on the metasternum. Some of the chief characters lie in the legs, which will presently be noticed more at length. The wings are bilobed, the basal part being cut off from the rest of the wing (*vide* A. Murray, Mon. of the *Nitidulidæ*, p. 221); this is one of the characters that separate the genus from *Pria*, which has the wing entire; the separation, however, is not so marked in *Meligiethes* as in *Amphotis* and some

other genera of the *Nitidulidæ*, as it only presents the appearance of rather a small triangular excision on the lower part of the wing.

In size the species range from $\frac{1}{2}$ lin. to $1\frac{1}{2}$ lin.; as a rule, however, they do not exceed 1 lin. The colour is usually black, sometimes very shiny, sometimes dull or leaden; several species have a bluish or greenish (occasionally a bronze or purple) metallic lustre; none, however, of the British species are red or testaceous (like the Continental *M. fuscus*), except a variety of *M. rufipes*, which is of a dark ferruginous colour; a mahogany coloured tinge is sometimes present on the purple varieties of *M. æneus*.

As might be expected from the similarity of form, and in most cases of colour, and also in consequence of the large number of species (in the European catalogue there are over 100, of which we possess more than 30), their identification is often very difficult. Various methods of subdividing them have been proposed, and different characters have been adopted by different authors. Erichson trusts chiefly to the denticulation of the anterior tibiæ; Reitter makes a great point of the straightness or emargination of the anterior margin of the forehead, and also of the presence or absence of network or cross striation between the punctures of the thorax and elytra; while Brisout lays great stress upon the characters of the under-side, particularly of the metasternum and the last abdominal segment of the males. All the differences that can be found in so obscure a genus must be of great use. The species can be, as a rule, roughly separated into groups by size, colour, and contour; but the best determining character appears to be the denticulation of the anterior tibiæ, and the degree of punctuation and of cross-striation between the punctures. The anterior tibiæ present four or five distinct types of serration or denticulation, and the punctuation and cross-striation also varies considerably; sometimes the latter takes the form of very fine alutaceous network covering the whole body, sometimes of coarse transverse scratches; occasionally it is confined to the elytra and is absent on the thorax; and in one of our species (*M. murinus*) it is peculiar to the scutellum; in some cases only very slight traces are visible, which are often so feeble that the interstices are, for purposes of sub-division, conveniently regarded as quite smooth. In all cases a compound microscope with at least a one-inch objective is required for the examination of this character.

The characters of the under-side are, as has been said above, very useful in many cases; but it is a question whether they are always quite constant, and they are, at all events, better regarded as secondary

for, if a species can be determined (as most can be) from the upper-side without having recourse to the lower, it is much more convenient, especially in the smaller genera where the insects have to be mounted on card, and cannot well be pinned. The colour of the legs and the basal joints of the antennæ are sometimes of use, but they must not be depended upon alone, as they are very apt to be misleading, being very different in even slightly immature specimens; useful characters are also to be found in the dilatation of the joints of the anterior tarsi of the males of some species, and also in the shape of the middle and posterior tibiæ, and the arrangements of the bristles or hairs with which they are clothed.

A few words remain to be said with regard to the shape of the anterior margin of the forehead, on which Reitter, in his "Revision der Europäischen Meligethes Arten" (a work indispensable to any student of the genus), founds his principal divisions. This author divides the genus into three sub-genera, as follows: *Meligethes*, containing the bulk of the species, distinguished by having simple claws not toothed at the base; *Odontogethes*, which has the claws broader and strongly toothed at the base, containing the single European species *O. hebes*, Er. (*M. olivaceus*, Sturm); and *Acanthogethes*, which has the claws as in the preceding genus, but has the forehead deeply excised in a semi-circle and the anterior tibiæ strongly toothed, whereas in *O. hebes* the anterior tibiæ are very finely toothed, as in *M. rufipes*, &c., and the anterior margin of the forehead is straight; this sub-genus contains our *M. solidus*, Kug., *M. brevis*, Sturm (*pictus*, Rye), and three other species.

The sub-genus *Meligethes* is divided by Reitter into three divisions according to the shape of the anterior margin of the forehead, which, taking our species alone into consideration, are as follows:

1st.—Forehead with the anterior margin straight or nearly straight. *M. rufipes*, *lumbaris*, *fulvipes*, *coracinus*, *corvinus*, *æneus*, *viridescens*, *symphyti*, *subrugosus*, *serripes*, *nanus* (*marrubii*), *obscurus*, *bidens*, *umbrosus*, *incanus*, *ovatus*, *picipes*, *flavipes*, *memnonius*, *ochropus*, *brunnicornis*.

2nd.—Forehead with the anterior margin excised, with the angles of the emargination round or obtuse. *M. difficilis* and *var. Kunzei*, *morosus*, *viduatus*, *pedicularius*.

3rd.—Forehead with the anterior margin excised in a semi-circle, or more or less deeply emarginate, with the angles of the emargination acute. *M. rotundicollis*, *murinus* (*seniculus* ♀), *lugubris* and *var. gagathinus*, *bidentatus*, *erythropus*, *exilis*.

These divisions have been given at length, because they have been employed by many English entomologists; at the same time, although the emargination of the forehead is in many cases a most useful character, it is hardly one on which to found primary divisions; in the first place, some of the species belonging to the first division have the anterior margin of the forehead emarginate to a certain degree (*vide* Reitter, *l. c.*, p. 31), so that a person working the group from descriptions might not know, in some instances, whether they were to be placed in the first or second division, the phrase "straight or almost straight" used by Reitter being in itself misleading: in the second place, unless the insect is placed with its forehead quite flat under the microscope, the emargination, especially where it is slight, may be passed over altogether; this is, of course, a very minor objection, but it will be found a practical one. In examining *Meligethes* as they are ordinarily set, with the head almost at right angles to the thorax, it is often very hard to see the anterior margin to begin with, and if a species can be placed in a group without reference to it, it is much more convenient; after all the character is not of great importance as far as our fauna is concerned, for the first division contains twenty-one species, the second only four, and the third only six, and the species of the third division, at all events, are easily distinguished without reference to it, so that there are very few species towards the separation of which we are helped by it, if we make it a primary character; it is true that, in some instances, it is exceedingly useful as a help for separating species that are otherwise closely allied, *e. g.*, *difficilis* and *brunnicornis*, *erythropus* and *obscurus*, but in one way this very point forms one of the strongest objections to the use of this character for the formation of divisions, for by it forms that are evidently very closely connected, if not actual races of the same species, are placed not only in different groups, but in different divisions, and separated very widely from one another.

In the following division of the genus all the above characters have been made use of to a greater or less degree; it is, however, almost impossible to divide *Meligethes* satisfactorily, as, whatever arrangements may be made, there will always be some species that will not fit in, and whose position it will be hard to determine.

I may say that I have before me at present the whole of Mr. Rye's almost perfect collection of the genus (kindly lent me by Mr. Mason), and also Dr. Power's (the latter containing about 1000 specimens), besides Mr. Wilkinson's and my own. I must thank Mr. Champion and Mr. C. O. Waterhouse for their kindness in sending

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me unique, or almost unique, specimens for examination; I am also much indebted to Mr. Gorham and Mr. Champion, both of whom in former years have made a special study of the genus, for valuable information as to localities, plants, habits, &c.; and to Mr. Newbery, Mr. Chappell, Dr. Capron, and other collectors, who have sent me lists of localities, &c., for various species. I must also thank M. Charles Brisout de Barneville and Herr Reitter for kindly sending me foreign types.

I. Tarsal claws simple.

i. Anterior tibiae very finely toothed, rather more distinctly towards apex.

1. Colour black, with at most very slight traces of metallic lustre.

A. Legs light.

a. Species large, black, oval, or broad oblong; punctuation and cross striation of elytra forming wavy lines; club of antennae dark.

α. Sides of thorax considerably contracted towards apex; thorax very finely and indistinctly punctured.

M. rufipes, Gyll.—The largest of our species; easily distinguished from all the others (except *M. lumbaris*) by its size, taken in conjunction with its red legs; smaller specimens closely resemble *M. lumbaris* (which is the *var. b.* of *M. rufipes* of Gyllenhal, Ins. Suec., i, 235), but may be separated by the shape and the punctuation of the thorax; the first joint of the antennae in *M. rufipes* is light, in *M. lumbaris* more or less dark, and in the former species the margins of the thorax are broader and of a reddish colour, whereas, in the latter, they are narrower and darker; the latter distinctions, however, although as a rule they hold good, are not always constant, and are apt to be misleading.

Length, 1½—1¾ lin.

Very common and generally distributed; abundant in hawthorn bloom in spring, and also found on *Ranunculaceae*, *Rubi*, *Allium*, &c. There is a reddish variety of this species, which is not very common; Dr. Power has taken it in Hainault Forest, and Mr. Newbery at Highgate; in this variety the thorax, except the margins, is rather darker than the elytra, but the whole insect is of a dull reddish tint. One of Dr. Power's specimens has the thorax and one elytron of the normal colour, with a slight greenish metallic tinge, and the other elytron of the colour of the variety.

β. Sides of thorax only slightly contracted towards apex; punctuation of thorax fine but distinct.

M. lumbaris, Sturm.—Considerably smaller than the average specimens of the preceding species, rather shorter, narrower, and more oblong, with thorax more distinctly punctured than elytra, first joint of antennae usually dark, and legs considerably stronger and of a darker colour than in the preceding species.

Length, 1½—1¾ lin.

Not common, although rather local, on broom, nettles, hawthorn, and *Umbelliferae*. Cowley, Darenth, Horsell, Guildford, New Forest; Bearsted, Kent, on roses, particularly garden ones, Mr. Gorham; Southgate, Loughton, Southampton, on *Pulicaria dysenterica*, Mr. Newbery; Mickleham, Amberley, Esher, Repton, &c. In Mr. Rye's collection there is a very small specimen hardly one line in length, with well-marked semi-circular depressions on each side of the thorax, but this is evidently abnormal.

b. Species smaller, rather narrow-oblong; punctuation and cross striation of elytra not forming wavy lines; antennæ entirely light.

M. fulvipes, Bris.—Oblong-ovate, black, with occasionally a leaden reflection, with short grey pubescence; very finely punctured with distinct cross reticulation between the punctures; legs and antennæ light red or reddish-yellow, occasionally rather darker; anterior tibiæ with very fine, almost imperceptible, teeth, which are slightly stronger at apex.

Length, 1—1½ lin.

Askham Bog, Fairlight, North Devon, Dagenham, Strood, South-end; very local in marshy places on *Umbelliferae* and *Genistæ*.

This is a very distinct species, and cannot well be confounded with any other; rubbed examples occasionally resemble, at first sight, some specimens of *M. picipes*, but the shape, and the straight, slender and very finely toothed anterior tibiæ will at once mark the difference; the very plain cross reticulation between the punctures is a valuable character for the species.

B. Legs dark; at most anterior tibiæ somewhat lighter.

a. Elytra unevenly and rugosely punctured with strong transverse striation between punctures; length under one line.

M. subrugosus, Gyll.—Ovate, rather convex, shining black; elytra rugosely punctured with strong transverse striation, especially towards base; the front tibiæ are very finely crenulate, as in *M. corvinus*, and are rather lighter than the rest, but all the legs are more or less pitchy.

Length, ¾ lin.

A common continental species, but only one specimen has been found in Britain; it was taken by Dr. Sharp many years ago on the banks of the Water of Ken, Galloway.

The peculiar rugose and wavy sculpture, which is nearest to, but not quite distinct from, the sculpture of *M. rufipes*, is the chief characteristic of this remarkable insect, which in some points resembles at first sight *M. serripes*; this sculpture is very well seen if the insect be placed under a compound microscope in a cross half light. *M. substrigosus*, Er., is a variety of this species of not quite so deep black a colour, less convex, with finer cross striation, and with lighter legs and antennæ, according to Erichson; M. Brisout, however, says that they are darker than in the type form.

δ. Elytra evenly punctured with cross reticulation between punctures; length at least one line.

α. Punctuation weak; cross reticulation delicate, present on both thorax and elytra.

M. coracinus, Sturm.—Oblong-oval, black, rather dull, occasionally with a slight greenish or bronze reflection; punctuation of elytra and thorax close and fine, with very fine cross reticulation between punctures; thorax rather variable in shape in the sexes; legs and antennæ pitchy; anterior tibiæ rather lighter, very finely toothed, rather more distinctly towards apex; posterior pairs of tibiæ straight or almost straight for two-thirds from base, and from thence sharply and obliquely cut off to apex. Length, 1 lin.

Not rare on the continent, according to M. Brisout, on flowers of *Galium* and *Prunus spinosa*; very rare in Britain; only three or four authentic examples are known; of these I have two before me, one in Mr. Rye's collection with no locality attached, and another which has been kindly sent me by Mr. Waterhouse, which he tells me was taken at Hampstead; the latter specimen is a little more strongly punctured on the elytra than Mr. Rye's and foreign specimens that I have seen, and shows the greenish reflection, which, as a rule, is almost entirely absent. I at first thought that this example might be referred to *M. subæneus*, Sturm, but, on comparing it with a type sent me by Herr Reitter, I find that *M. subæneus*, although very close to it, is more strongly punctured, and has the thorax more contracted in front; specimens of so-called *M. coracinus* are in many collections, but they are usually rather dark examples of *M. æneus*. I have had several of these sent to me as *coracinus*; the mistake is due to the fact that *M. coracinus* is said to have the greenish reflection: it is, however, as a rule, so very slight, that for all practical purposes the insect may be considered as black. Its very much finer punctuation, and the shape of the posterior pairs of tibiæ, serve at once to distinguish it from *M. æneus*, with which, however, it need hardly be compared by any one who has seen a true example.

β. Punctuation rather strong; cross reticulation between punctures rather coarse and uneven, present on elytra only.

M. corvinus, Er.—Ovate, shining black, convex; punctuation of elytra and thorax rather strong; interstices of elytra filled with rather indistinct and coarse cross reticulation, of thorax nearly smooth; legs and antennæ black, tibiæ somewhat thickened towards apex; anterior tibiæ very finely crenulated, crenulations obtuse and hardly perceptible under a considerable magnifying power. Length, 1½ lin.

On *Labiata*, very rare; Mickleham, Dr. Power; on *Agraphis nutans* and *Melampyrum pratense*, Caterham, Mr. Champion. It is easily separated from the preceding species by its general contour, larger size, deep black shining colour, and stronger punctuation.

(To be continued).

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collection." I think some further evidence of the identity of this insect is required, if it is really the *litigiosus* of the continent (which has no synonym in the European catalogues); it is a most interesting addition to the British list, and it would be very satisfactory to know, if possible, the locality where they were taken, and how many years ago, and whether about the time that Mr. Dawson says of *tenebrosus* "taken by himself and Dr. Power below the cliffs, &c.," and what Mr. Dawson's opinion was of these identical specimens which are so distinct from *tenebrosus*; perhaps Mr. Dawson never saw these specimens of *litigiosus*, hence, his omitting to mention them in his notes in the Entomologist's Annual.

RHIZOTROGUS OCHRACEUS, Knoch.—I believe this insect was introduced as British by the late J. F. Stephens, in his "Illustrations of British Entomology, Mandibulata," vol. iii, p. 221 (October 31st, 1830), under the name of *Amphimalla Fallenii*, Gyll., and is given by him in his Manual of British Coleoptera, p. 168 (1839), as *Rhizotrogus Fallenii*; in the former of his works he says, "The only example I have seen of this species was taken many years since by Mr. Chant, in whose collection it is preserved, but he forgets the exact locality."

Mr. E. W. Janson very kindly gives me the following information: "On the 2nd September, 1850, Mr. Stephens exhibited at the meeting of the Entomological Society of London, specimens of *Amphimalla verna*, Meg.? found by Captain Parry at Tenby (*vide* Trans. Ent. Soc., n. s., i, proceedings p. 34, and Zoologist, 1850, p. 2938), which, were I have little or no doubt *Rhizotrogus ochraceus*, as I know that he has given away examples of this species, and still has a goodly series of it in his cabinet; moreover, my son has two specimens from Mr. Dossitor's collection, and this gentleman restricted his collection to specimens actually taken by himself."

I have not heard of any recent captures of this rarity, and if my memory be correct, it is not in the collection of British *Coleoptera* in the National collection.

TRICHIUS ABDOMINALIS, Ménétr.—This insect appears to have been announced, with the characters which distinguish it from its nearest ally, *T. fasciatus*, by the late F. Smith, under the name of *T. zonatus*, Schmidt (Zoologist, vol. vi, p. 2216 [September, 1848]), when he says: "All the specimens taken in Scotland are, I believe, the *T. fasciatus*, and all the specimens which I have seen of *T. zonatus* are from old collections. I have not been able to ascertain satisfactorily the locality of any of the specimens, or by whom they were

captured. I send you short descriptive differences, whereby any one can ascertain which species he possesses, and should any one be able to give the locality of *zonatus*, and satisfactory evidence of its capture, the question will be at once decided."

Mr. O. Janson has a specimen from the late Mr. Chant's collection. *Gallicus*, Muls., is a synonym of *abdominalis*, Ménétr., and *zonatus*, Schmidt, apparently another synonym. The continental *zonatus*, Germ., being a separate species.

Like the preceding species, I have heard of no recent captures, and the matter seems to stand as Mr. F. Smith left it in the *Zoologist*, for September, 1848. However, both *R. ochraceus* and *T. abdominalis* are in all the British catalogues, viz., G. R. Waterhouse, 1858, G. R. Crotch, 1863, E. C. Rye, 1866, David Sharp, 1871, F. P. Pascoe, 1882, and Sharp's 2nd Edition, 1883, besides Matthews' and Fowler's.

Deal: February 7th, 1885.

DESCRIPTIONS OF A NEW GENUS AND SOME NEW SPECIES OF PHYTOPHAGOUS COLEOPTERA.

BY MARTIN JACOBY.

Cryptocephalus interstitialis, sp. nov.

Robust, oblong, narrowed behind. Below greenish-black, closely pubescent. Thorax, femora, and base of the tibiæ, fulvous. Elytra metallic-green, deeply and closely punctate-striate, the interstices sub-costate, finely punctured and wrinkled. Length, 4 lines.

Hab.: Madagascar (Majunga).

Head greenish-black, the sides strongly punctured, the middle with a longitudinal groove, lower part of face covered with adpressed, whitish, long pubescence. Eyes large, triangularly notched. Palpi, and the two or three basal joints of the antennæ fulvous, the latter extending slightly beyond the base of the elytra, their third and the two following joints slender, sub-equal, the rest shorter, black, slightly thickened. Thorax transverse, greatly narrowed and deflexed in front, the sides nearly straight, posterior margin concave, its median lobe distinctly bidentate; surface extremely finely and closely punctured, the punctures slightly elongate, fulvous, extreme posterior margin piceous, serrate throughout. Scutellum sub-quadrate, black, punctured at the sides. Elytra not wider at the base than the thorax, distinctly narrowed behind, of a metallic greenish-bronze colour, each elytron with ten regular rows of deep and closely placed punctures, which, at the posterior portion, are transversely aciculate or wrinkled, the interstices very closely and finely punctured, obsolete raised, more distinctly convex at the sides. The apex of each elytron slightly produced in a rounded point. Legs robust, fulvous, the apex of the tibiæ and the tarsi black. Prosternum broad, square-shaped. Last abdominal segment with a deep transverse fovea. Pygidium broadly truncate at its apex.

The single specimen of this large and well-marked species, which is contained in my collection will, I think, have to be placed in Suffrian's first Group of African *Cryptocephali*, near *C. tridentatus*, Klug., from which it differs sufficiently in its larger size, different coloration, and closely and finely punctured thorax.

Æsernoides, nov. gen., *Chrysomelinæ*.

Sub-quadrate-ovate, convex; third joint of maxillary palpi scarcely shorter than the fourth, the latter transversely shaped; its apex obliquely truncate. Antennæ slender and elongate, the apical joints flattened, the second joint half the length of the third, the fourth shorter than the preceding one. Thorax transverse, about three times as broad as long, its angles acute and produced, surface flattened, the sides thickened and limited interiorly by a deep longitudinal and sinuate fovea. Scutellum triangular. Elytra convex anteriorly, from there to the apex quickly depressed, surface regularly punctate-striate. Prosternum elongate, its surface broadly flattened, not produced in front, its basal margin deeply emarginate. Mesosternum very narrowly transverse, convex. Metasternum longitudinally grooved. Legs long and slender, the tibiæ not channelled. Posterior first tarsal joint as long as the two following united. Claws bifid, the inner division long and pointed.

This rather remarkable genus seems somewhat allied to *Æsernia* in the shape of the thorax and its lateral grooves or foveæ, as well as in the emargination of the base of the prosternum. It differs, however, in its totally different general shape, and the deeply bifid claws. The coloration of the only species known to me is also rather different from most other Australian forms with which I am acquainted, from which the shape of the thorax and the thickened sides, as well as the slender and elongate legs, will distinguish it.

Æsernoides nigrofasciatus, sp. nov.

Below piceous; antennæ black, basal joints testaceous below; head black; thorax piceous, closely punctured; elytra bright flavous, a spot at the shoulder, a transverse, medially widened band before the middle, extending up the suture, a deeply dentate transverse fascia below the middle, and a spot at the apex, black.

Length, 5 lines.

Head very closely and finely punctured, obsoletely longitudinally depressed between the eyes; antennæ extending to one-third the length of the elytra, slender, the first three joints testaceous below, the rest black, rather flattened and somewhat widened; thorax more than twice as broad as long, the sides nearly straight, a little constricted at the middle, all the angles acute and produced, the posterior ones thickened; surface closely covered with small and larger punctures, the sides much and broadly thickened, preceded anteriorly by a deep fovea and posteriorly by a longitudinal depression; scutellum impunctate; elytra wider at the base than the

thorax, slightly constricted before the middle at the sides, convex to the extent of their first third, when viewed sideways, from there to the apex rather abruptly declining; yellow, each elytron with ten rather fine, but regular, rows of punctures, the first sutural one very short; a transverse black band much widened at the suture, and extending upwards to the base, but not to the lateral margin, is placed immediately before the middle, another band below the latter extends from the lateral margins across the elytra, this band is very wide at the sides, and deeply dentate and narrowed near the suture, widening again at the latter place; a transversely shaped spot is placed at the apex, and a smaller one at the shoulder; under-side and legs, as well as the anterior margin of the thorax, are piceous.

Hab.: South Queensland, Australia. (Two specimens are contained in my collection).

Calomela (Australica) capitata, sp. nov.

Sub-quadrate, convex, obscure metallic dark blue. Head, antennæ, and legs, rufous. Thorax closely punctured. Elytra closely geminate punctate-striate. Length, 3 lines.

Hab.: Australia, Rockhampton.

Head closely punctured. Antennæ short, gradually dilated at the terminal joints, the six lower joints rufous, the rest fuscous. Thorax nearly three times as broad as long, the sides closely and strongly, the disc finely, punctured. Scutellum impunctate. Elytra sub-quadrate, not wider at the base than the thorax, each elytron with three double rows of punctures near the suture, the sides more closely and irregularly punctured, distinct to the apex. Under-side purplish, the last abdominal segment, as well as the legs and tarsi, rufous. Claws appendiculate.

Collection Jacoby (two specimens).

Allied in shape to *C. pulchella*, Baly, but differing in general colour and the double rows of punctures at the elytra, which extend upwards to the base, instead of becoming single rows, as in the allied species. The head and legs in the present species are also of a more decided rufous colour, while that of the elytra is a leaden-blue, the thorax being more of a greenish-blue.

Calomela 6-maculata, sp. nov.

Fulvous. Tibiæ and tarsi piceous. Thorax with a spot at each side, and a central band, black. Elytra metallic-blue, a spot at the base, a transverse dentate band at the middle, and another spot near the apex of each elytron, yellow.

Var., the thoracic spots very obsolete.

Length, 3 lines.

Hab.: New Guinea, Port Moresby.

Head with a few indistinct punctures, fulvous, its sides and the anterior margin edged with black. Antennæ slender, extending beyond the base of the thorax, fulvous, the terminal joints obscure fuscous, third joint distinctly longer than the

fourth. Thorax three times as broad as long, with some deep and scattered punctures, the interstices also very minutely punctate; at the sides a round black spot is placed, and the middle of the disc is occupied by a longitudinal black band, which is divided posteriorly in two branches. Scutellum fulvous. Elytra strongly and very regularly punctate-striate, the apex nearly impunctate; of the spots, the first is very small and placed close to the scutellum, the intermediate one is of transverse shape not extending to either margin, and has its posterior edge dentate in the middle, the third spot is of irregular rounded shape, and much larger than the first; the knees, tibiae, and tarsi are piceous, rest of the legs and the under-side fulvous. Claws appendiculate.

Two specimens of this distinct species are contained in my collection.

Lamprolina unicolor, sp. nov.

Entirely metallic-green. Head and thorax very closely punctured. Elytra strongly and closely rugose-punctate. Length, 2—3 lines.

Hab. : Australia.

The entire upper surface of this insect is closely and strongly punctured, without any arrangements of rows. The antennæ extend to the first third of the length of the elytra, and have the last seven joints black, the rest metallic-green. The scutellum is much broader than long, and also punctured. All the characters agree with *Lamprolina*, but the species is of smaller size than any of the other described ones, this and the uniform green colour, together with the strong and irregular punctuation, will at once distinguish *L. unicolor*.

I received two specimens of this species from Dr. Pipitz, of Graz.

Chalcolampra rufipes, sp. nov.

Ovate, narrowed behind, æneous. Head, two basal joints of the antennæ, and the legs rufous. Tarsi black. Thorax remotely punctured. Elytra finely punctate-striate. Length, 4 lines.

Hab. : Queensland.

Head with a few fine and scattered punctures; clypeus separated from the face by a deep angular groove, rufous, like the labrum and the rest of the head. Palpi black. Antennæ robust, black, the two basal joints rufous, third and fourth joints equal. Thorax transverse, the sides straight near the base, rounded anteriorly, posterior margin rounded and broadly produced at the middle, surface very remotely but deeply punctured, a little more closely at the sides than at the disc. Elytra finely and regularly punctate-striate, the interstices flat, extremely finely punctured, femora and tibiae rufous.

A single specimen in my collection.

Easily distinguished from any of the other described species by the colour of the head and legs.

Phyllocharis cyanicornis, var. *confluens*, Jacoby.

Hab. : Torres Strait.

This variety, of which six specimens are contained in my collections, has, to

my knowledge, not been noticed by any author, the species itself, as is well known, being rather subject to variation in regard to colour. In my specimens, the elytra are entirely metallic-blue, with the exception of a narrow, more or less distinct, oblique, fulvous stripe from the shoulder to the suture below the middle, the extreme lateral and sutural margin being of the same colour anteriorly. The central black spot of the thorax is reduced to a small and narrow line. Every other character agrees with the typical form, the only one to which this variety can be referred on account of the indication given by the fulvous stripe, of the original pattern of the elytra, and the central thoracic spot. In one specimen, the elytral stripe also has vanished, and the elytra are uniform blue, with the exception of their lateral edge. Size, colour of the under-side, as well as structure, are absolutely as in the type.

Melasoma nigritarsis, sp. nov.

Testaceous; last six joints of the antennæ and the tarsi, black; tibix more or less piceous; thorax very minutely, elytra more strongly punctured, their lateral margin thickened. Length, 3—4 lines.

Hab.: Delagoa Bay, Africa (collected by Mrs. Monteiro).

Head with a deep triangular depression, very finely punctured when seen under a strong lens; antennæ scarcely reaching beyond the base of the thorax, the terminal joints transverse, five basal joints fulvous, the rest black; thorax more than twice as broad as long, anterior margin deeply concave, surface scarcely visibly punctured, a little more distinctly at the sides, where a row of longitudinal, rather deep, punctures is placed close to the lateral margin; elytra with the lateral margin distinctly thickened through their entire length, their surface closely and rather strongly punctured.

This species seems closely allied to *M. livida*, Stål, but differs in the colour of the tibix and tarsi, the more transversely shaped-thorax, and its fine punctuation.

London: January, 1885.

LITTLE KNOWN BRITISH ACULEATE HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

Under this heading, in the Magazine for last May (vol. xx, p. 270), I called the attention of Hymenopterists to several rare and doubtful species, about which further information was much needed. Such information has come to hand in a few cases, as the result of last season's collecting, and the questions relating to the following species have been thereby partly cleared up.

1. *POMPILUS PECTINIPES*, V. d. L., ♂.

I captured at Chobham, in August, two males, which, following the views of Wesmael and Thomson, are clearly referable to this

species. They are quite distinct from any of our other British *Pompili*, and also from the ♂ of *Evagethes*, in the structure of the abdominal segments, and, therefore, there scarcely seems any reason to doubt that *pectinipes* is a distinct species of which we now know both sexes. Still, I must own to having doubts, even now, of the distinctness of *Evagethes bicolor* and *P. pectinipes*, ♀: it scarcely seems possible that the females of two species in two distinct genera should be so alike as these two are. I have again and again most carefully examined them, and can find no character whatever whereby to distinguish them, except the number of sub-marginal cells; and as specimens have occurred with three cells in one wing and two in the other, this is scarcely of itself satisfactory, and it seems to me possible yet that a female may be discovered which may prove to be the real partner of the new ♂. Whether, however, these females are distinct or not, the males are very easily distinguished; that under consideration at present having the 8th ventral segment tricarinate at the base, the lateral carinæ being sharp and polished, and extending for only about a quarter of the length of the entire segment from the base, the central one dull and rounded, and extending to about two-thirds of the length of the segment, the other ventral segments are not impressed longitudinally, as in *chalybeatus*, but the 6th segment is largely emarginate at the apex, the posterior emargination of the prothorax is also more rounded than in any other of our red-bodied species.

2. SPHECODES.

I think I have said enough on this genus in preceding numbers to show that the past season has greatly increased our knowledge of its very closely allied and difficult species.

3. ANDRENA ANGUSTIOR, Kirb.

Mr. V. R. Perkins has forwarded to me from Gloucestershire several males and females of what I believe to be *angustior*; the type of the ♀, Kirby says, was in Banks's collection, but I have sought it there in vain; the type of the ♂, F. Smith says, is referable to *atriceps*. It is not, therefore, easy to be sure of what Kirby meant, but the insects taken by Mr. Perkins are quite distinct from any other of our species, and appear to me to be identical with *symphyti*, Perez; the females would agree with Kirby's description, but for the colour of the tibiæ, which are not ferruginous, as described by Kirby, but only more or less testaceous at the base and apex, still, this probably is a mere matter of colour variation; both sexes may be known from *Gwynana*, which is the species they most resemble, by the longer

2nd joint of the flagellum, which, in the ♂, is as long as the following two together, and in the ♀ is as long as the next three. Whereas, in *Gwynana* the 2nd joint in the ♂ is only a little longer than the 3rd, and in the ♀ the 2nd is distinctly shorter than the next three. The distance between the eye and the mandible is also longer in *Gwynana*, ♀, than in the present species, and more shining. In colour this species resembles very pale *Gwynana*, the hairs of the face being greyish-brown, and the margins of the segments of the abdomen fringed with pale hairs. I find specimens in my collection agreeing with those sent by Mr. Perkins, from Wandsworth, ♀, and Chobham, ♂ and ♀, and I took two females this year at Bromley, in June. Mr. Perkins' specimens were captured on *Allium ursinum*, which he says is its usual plant.

4. *BOMBUS NIVALIS*, Dhlb. ?.

Through the kindness of Mr. C. A. Briggs, I have been able to obtain from Unst, Shetland, a ♀, which agrees exactly with the specimen of that sex in the British Museum; the ♂, however, is still wanted to decide for certain if the species found in Shetland be identical with *nisalis*, Dahlb.

St. Ann's, Mason's Hill, Bromley, Kent:

January 16th, 1885.

NOTES ON BRITISH *TYPHLOCYBIDÆ*, WITH DIAGNOSES OF TWO NEW SPECIES.

BY JAMES EDWARDS.

DICRANONEURA.

- 1 (8) Wing-nerves pale.
- 2 (3) Front margin of crown angular (more conspicuously in ♀)...*flavipennis*, Zett.
- 3 (2) " " " " not angular.
- 4 (5) Inner margin of genital plates, ♂, concave, distant, enclosing between them a wide oval space...*citrinella*, Zett.
- 5 (4) " " " " " " at least sub-contiguous.
- 6 (7) Penis simple. Genital plates truncate at apex. Lobes of pygofer without any horn on the inner side *similis*, n. sp.
- 7 (6) " " exactly resembling the claw-joint of a *Carabus*. Lobes of pygofer each with a large dark coloured horn on the inner side near the apex ... *mollicula*, Boh.
- 8 (1) Principal wing-nerves fuscous or black.
- 9 (10) Scutellum with a distinct black spot at apex *pygmaea*, Dougl.
- 10 (9) " immaculate.
- 11 (12) Third sub-apical area of elytra hyaline.....*variata*, Hardy
- 12 (11) Elytra opaque throughout *aureola*, Fall.

1. *FLAVIPENNIS*, Zett.

Deep yellow, abdomen above black. Hind margin of pronotum with an arcuate notch of equal width with the base of the scutellum. Elytra deep yellow, membrane, and occasionally a small space at the apex of the 2nd and 3rd sub-apical areas, whitish-hyaline. Hind-tibæ with a row of distinct black points. Length, $3\frac{1}{2}$ mm.

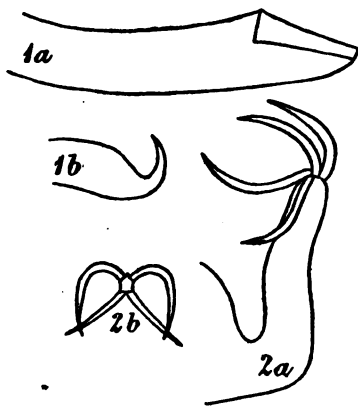
A marsh species, at least in Norfolk.

2. *CITRINELLA*, Zett., J. Sahlb., *nec* Dougl.

Dirty yellow; abdomen above black, paler towards the apex. Corium dirty yellow; 2nd and 3rd sub-apical areas, except the basal 3rd of the former, hyaline. Membrane fusco-hyaline. Hind-tibæ with a row of distinct black points. ♂ genitalia as above. Length, $3\frac{1}{4}$ mm.

Foxley Wood, Norfolk.

Judging from the ♂ genitalia, my insect is certainly identical with that described by J. Sahlberg as *citrinella*, Zett., and by the same token is clearly the *forcipata* of Flor.

3. *SIMILIS*, *n. sp.*

1. *Dicranoneura similis*, *n. s.* 2. *Typhlocyba salicicola*, *n. s.*
 a. Genital plate. a. Penis.
 b. Penis. b. Appendages of same, genital plates, and from the next seen from above.

Very similar in colour to the last, but distinguishable by the very different structure of the ♂ genital plates. The latter when mounted in Canada-balsam (with pressure), are seen to be truncate at the apex, the surface of the truncature being narrow-oblong, with concave sides and straight ends, of which one is twice as long as the other. The penis is very similar to that of the last species. Apart, however, from microscopical examination, this species may be readily separated from the last by the straight sub-contiguous inner margins of the by the coloration of the elytra.

Length, $3\frac{1}{4}$ mm.

Stratton Strawless, Norfolk.

4. *MOLLICULA*, Boh., Dougl., *citrinella*, Dougl.

Deep yellow, in some examples inclining to orange; abdomen above black, pale towards the apex. Hind-margin of pronotum at most faintly concave. Elytra deep yellow, membrane and a wedge-shaped spot at the apex of the 2nd and 3rd sub-apical areas hyaline. ♂ genitalia, as above. Length, $3\frac{1}{4}$ mm.

Amongst low plants in dry place.

My good friend, Mr. Douglas, having sent me types of the insects described by him (Ent. Mo. Mag., xii, 27, 28) as *citrinella*, Zett., and

mollicula, Boh., respectively, I am enabled to make the above correction. The types bear out the respective descriptions in all points, except the comparative lengths of crown and pronotum, which, on actual measurement under the microscope, are as follows: *citrinella*, ♂, 2—4, ♀, 2—5; *mollicula*, ♂, 3—6, ♀, 2—4; the pronotum, therefore, proving, in each case, to be at least twice as long as the crown. Seeing that the structure of the ♂ genitalia is identical in both the above forms, the comparative differences in the length of the 2nd and 3rd apical areas can scarcely be allowed to confer specific rank, the more especially when we examine specimens intermediate in this respect, but identical in the ♂ genitalia, of which latter I possess several.

5. PYGMÆA, Dougl.

♂. Orange-yellow; abdomen above black, genitalia yellow. Corium and clavus inwardly paler orange than on their outer sides, nerves deeper orange, inner margin of clavus with a fuscous line. Membrane with a slightly fuscous tinge, nerves pale orange. Legs orange; claws infuscated. Length, 2½ mm.

Darenth Wood, October.

The single ♂ on which this species was founded still remains unique.

6. VARIATA, Hardy, = *aridellus*, J. Sahlb., = *cephalotes*, Fieb.

Pale greenish-yellow, dull; abdomen black. The colour of the elytra varies to dark green, sometimes with a reddish tinge, or occasionally deep orange-red, the latter in Northern examples. Length, 3½ mm.

Damp places; common, but local.

7. AUREOLA, Fall.

Crown, pronotum, and scutellum yellow, elytra light yellowish-green; abdomen above black. Fore-parts and legs, particularly the face and the latter, frequently tinged with red. Easily distinguished from the last, the only British species with which it can be confounded, by its entirely opaque elytra. Length, 2½—2¾ mm.

On *Carices*, Findhorn Marsh, Forres, Morayshire. Said to occur on *Calluna* in August and September.

TYPHLOCYBA SALICICOLA, n. sp.

Somewhat larger and decidedly stouter than *T. rosæ*. Very pale creamy-white, scutellum tinged with pink, at least, in fresh examples. Penis surmounted by a tuft of four long sickle-shaped appendages. Length, 3½—4½ mm.

On willows; common.

I have long been of opinion that our pale willow-frequenting *Typhlocyba* was distinct from *rosæ*, but I have only recently had an opportunity of confirming that opinion by a critical examination of the ♂ genitalia.

[I am not disposed to question the correctness of the conclusions at which Mr. Edwards has arrived respecting my *Dicr. citrinella* and *D. mollicula*, supported as they are by the identity of structure in the ♂ genitalia; for my identification was founded mainly upon the difference in the apical cells of the elytra, which was very apparent in the examples I then possessed, but in some taken since I have noticed the existence of the intermediate gradation of neuration mentioned.—J. W. D.]

Occurrence of Andrena nigroaenea and Nomada alternata in December.—On December 30th, 1884, I made a tour of inspection of the various banks in this neighbourhood where I find *Atypus piceus* in plenty. Many of the "tubes," or nests having been frequently examined and changes noted down since April 13th, 1882, the date when first I turned up this noble spider in Woking.

On touching the loose sand close to one of the tubes, some of it was displaced, and fell down. I was surprised to notice an *Andrena* walk out of it, and after shaking the sand from his wings, he attempted to fly away, but was quickly boxed, and before I had time to pocket it, a gay *Nomada* appeared from the loose sand, and succeeded in flying a few inches before I captured it. The day had been beautifully fine and spring-like, the night following we had a sharp frost, and on examining the pot, into which I had put the bees, found both had disappeared under the sand; the *Nomada* came up again in two or three days, quietly resting on some damp moss until January 21st, when I took it out, and the next day I found the *Andrena* four inches under the sand, it was rather sluggish at first, but soon revived, attempting to fly! I sent both specimens to Mr. E. Saunders, who has kindly named them for me: ♂ *Andrena nigroaenea*, and ♀ *Nomada alternata*.—F. ENOCK, Woking: Feb., 1885.

Spanish insects and stridulating species.—The past summer I collected numerous insects, more especially *Lepidoptera*, in north-western Spain. I had drawn up a list of the latter indeed for publication, but as it appeared a little long, I thought it would be better to incorporate it in an account of my summer rambles I am working at for the press. I might, however, mention that melanism was frequent in Asturian insects, the *Orthoptera* in the mountains being as a rule blackish compared with the same species from the corn fields in the plains of Leon and Castille. The large white *Polyommatus Corydon* from the same limestone plains is also quite a feature in Spanish entomology, it is, it seems to me, even larger and whiter than in the Apennines; when I saw it flying I took it for *L. sinapis*; in the Asturias, however, it has its usual appearance. I gave what attention I could to the stridulation of insects. *Crioceris 12-punctata*, L., kindly determined for me by Mr. Waterhouse, I found to stridulate as the rest of the genus, by rubbing the apex of its abdomen against the tips of the elytra. I had no idea that this was a British insect, but it appears to be recognised as such by Stephens, who gives Bath and Bristol as localities. I rather suspect that both it and *C. merdigera* are imported into the country, and not natives so to speak. I do not think that the *C. asparagi*, L. stridulates as these other two which compose the genus *Lema* of Dr. Sharp. Another stridulating insect

I captured Mr. Kirby submitted to Mr. Distant for an opinion, but it is pronounced to be an immature species of *Redwius*, of which genus there are doubtless many musicians. At Valladolid the sand-wasps and bee-flies *Bombylius* and *Anthrax* were frequent on the sandy plain, and the red striped *Meloë majalis*, L., was conspicuous in the clover, but our white butterflies *Pieris*, seem rarer in Spain than England, *P. Daplidice* being the commonest.—A. H. SWINTON, Binfield House, Guildford: January, 1885.

Insect migration.—The last paragraph of Mr. Richard South's article (*ante*, p. 210), I entirely agree with, and wish to supplement his remarks by briefly recording my experience in 1877.

Colias Edusa had not been seen in St. Ives before 1877 by myself, or, I believe, any other entomologist.

The first specimen was captured on the 9th June by a friend. The next day (10th) I caught both a ♂ and ♀, which I supposed to be hibernated specimens, but which I now think must have immigrated here. I saw another *Edusa* on the 17th, and two more on the 18th.

In the "Field" newspaper for 16th June, a number of correspondents recorded the occurrence of *C. Edusa* in various localities, and in my note-book I wrote: "I now can hardly believe in hibernated specimens."

I saw no more individuals until the 8th of August, about two months after their first appearance. On this day I caught eight, all males, in extremely fine condition. I think they must have emerged that day. The wind was strong, and they flew low. A few I picked off the flowers as they settled there. During the month of August literally hundreds, even thousands, were seen; indeed, *C. Edusa* was by far the commonest butterfly. In Hemingford Meadow, near St. Ives, they were to be seen by scores. I caught sixty-four, and might have caught as many more.

Since 1877, although I have been out nearly every day, *C. Edusa* has not been seen *once*.

What is to account for this sudden and copious supply but immigration? If the season had been unfavourable, the migrants would have died, or their progeny.

The first specimens seen were *females*, the male not appearing until the middle of August. This fact specially supports the above conclusion. I positively believe the August specimens to have grown on the spot they were captured, but *not* the early females.

The extreme abundance of *Plusia gamma* in my garden in 1877 points to the season being peculiarly favourable to migratory movements.—HERBERT E. NORRIS, St. Ives, Hunts.: February 6th, 1885.

Insect Migration.—The observations of Mr. South on insect migration (*ante*, pp. 208—211), are of great interest, and those on *P. gamma*, are doubly interesting to me, because I have observed very nearly the same phenomena myself. At Margate, in 1879 (the same year, it will be observed, as that of Mr. South's observations), *Plusia gamma* was so extremely abundant, as to make it hopeless to hunt for other *Noctua*, flying both by day and by night everywhere. But one evening in August on going into the garden, I was struck by the fact, that although the number of moths on the wing was about the same as usual, they were all flying in the same direction—

seaward. I procured a net and captured several, they all proved to be *P. gamma*. The next day on going out it was at once obvious that *Plusia gamma* was not nearly so abundant as it had been on the day before, and all the specimens that could be seen were very poor. I was at first considerably puzzled, but I finally connected the two circumstances together, and concluded that there had been a migration northwards, since that was the direction in which the moths observed on the night before were flying.

I think, with Mr. South, that the extensive geographical range of certain insects is owing to migration. Supposing this be so, we should expect that these species would form a large part of the fauna of islands, distant from the land, and surrounded by a deep sea, and, judging from five months' experience of Madeira, this would seem to be the case. Let us take the butterflies of that island; those I observed were *Colias Edusa*, very common, January to March; I also saw on January 15th a light-coloured *Colias*, but being unable to capture it I could not ascertain the species, it may, very possibly, have been *C. Hyale*; *Vanessa cardui*, *V. Callirhoë*, this may be regarded as the representative of *V. Atalanta* in the island (there is a specimen of *V. Atalanta*, said to come from Madeira, in the British Museum collection, but I doubt whether this species is a native of the island), *Lycena batika*, in February, at flowers of *Pelargonium*, and *Satyrus xiphoides*, also in the month of February, flying round loquat trees and in other situations. Now of these *C. Edusa* and *C. Hyale*, probably migrate, and are, at any rate, well distributed; *V. cardui* and *L. batika*, are notorious examples of extensive range, and the first, undoubtedly, migrates; *V. Callirhoë* is represented even in India by a very nearly allied form (which may be regarded as the typical *Callirhoë*, and the Madeira insect as its variety, *vulcanica*, the red markings being paler in the Indian form), and *S. xiphoides* is very closely allied to the southern form of *S. Ægeria*.

With the moths, again, we find *Sphinx convolvuli* hovering over *Pelargonium* flowers at night; *Acherontia Atropos* is sometimes taken; *Deilephila euphorbiae* is abundant in the larval stage on the sea-spurge in the month of May; *Deiopeia pulchella* is represented by a specimen taken in a corn-field on May 3rd; *Mamestra brassicae* destroys the cabbage as it is wont to do in England; *Leucania extranea* is very common; we have three species of *Plusia*; *gamma*, abundant, *aurifera*, one specimen, and *chalcites*, one taken at flowers of white verbena, on the evening of May 21st, and, as a last example *Nomophila noctuella (hybridalis)* is very common. Certainly, most of these are widely distributed insects, and it is very probable that many of them migrate.

I fancy it is a mistake to suppose that the migratory insects are those which have large and seemingly powerful wings, for in Madeira the genus *Papilio*, for instance, is wholly unrepresented, and how few, if any, of the *P. Podalirius*, so common on the continent have reached England, and how rarely is *Machaon* accustomed to leave his native fen and wander over the country.

Some *Coleoptera* also seem to migrate; I think the genus *Calosoma* does, but not in numbers; *Coccinella*, on the other hand, sometimes forms vast swarms, which astonish the people of the maritime districts (and this genus is represented by numerous individuals in Madeira, two I brought home proved to be *C. mutabilis*). The water-beetles, too, often fly long distances; I once had one blown against my

hand, and lodge between my fingers, when walking by the sea at Margate, when a strong wind was blowing from the sea.—T. D. A. COCKERELL, Bedford Park: February 2nd, 1885.

[It has, I think, been incontestably proved that the swarms of *Coccinella* occasionally seen on our coasts are formed not of immigrants, but of would-be emigrants, stopped by, and driven back by, the sea, and accumulating by continuous supplies from inland. The masses of dead *Aphides* that sometimes form tide-refuse on our southern shores result from the same cause. But with regard to Britain generally, immigration is a far stronger factor than emigration, and enables us to include in our lists of British species, especially in *Lepidoptera*, a good many beautiful insects that are not truly natives. Some of these certainly, others probably, never breed here. Others again breed for a time, but would become extinct were it not for fresh immigration. This latter remark especially applies to our two species of *Colias*, and it might even apply to that most notorious migrant, *Vanessa cardui*.—R. McLAUGHLIN.]

Further evidence of the existence of insects in the Silurian period.—In the last number of this Magazine I referred to the evidence afforded of the existence of insects in the Silurian period by the discovery of a fossil scorpion in the upper Silurian rocks of the Island of Gothland. Further evidence to the same effect is furnished by the recent discovery, by Dr. Hunter, of Carlisle, of a second specimen of a scorpion, in the upper Silurian beds of Dunside, Leamshagow, Lanarkshire.

The discovery of this second scorpion had been reported to me prior to the date of my paper, but no description of the specimen having been published, nor any authentic information about it having been received, I did not allude to it. As a preliminary description of this scorpion, by Mr. B. N. Peach, has lately appeared in "Nature" (January 29th, 1885), this note may, perhaps, not be out of place, as a supplement to my previous communication.—H. GOSS, Surbiton Hill: February 9th, 1885.

Destruction of Fish by larvæ of Libellulidæ.—In the Hungarian "Rovartani Lapok" for December last, L. Biró states that the larvæ of *Libellulidæ*, species not determined, have made such ravages in the piscicultural establishment of M. le comte Pálffy, at Szomolány, that in a pond into which in the last spring 50,000 young fishes were put, only 54 could be found in September, but there were then there an immense quantity of the larvæ of *Libellulidæ*.—EDS.

On the sub-aquatic habits of the imago of Stenopsyche, a genus of Trichoptera.—The genus *Stenopsyche*, McLaugh., was characterized in 1865 (Trans. Ent. Soc., 3rd series, vol. v, p. 264) from a species from North India (*S. griseipennis*). Since then the same species, or one very closely allied thereto, has been found in North China, and in Japan. In the latter country it seems to be abundant, and it comes in nearly all collections. My nephew, Mr. W. J. Wilson, recently made a long tour in Japan on his way home from India, and obtained a few insects. Amongst these are a large number of the *Stenopsyche* in question, and I was induced to question him as to its habits. They were found at the little lake of Yumoto in the main island, at an elevation of about 5000 feet. He says they were abundant before dusk,

settling on the surface of the water, then closing their wings, *diving into the water, and swimming about vigorously beneath the surface*. It seems to me highly desirable to place such an important notice of habits on record. Unfortunately, he is not able to say whether the habit is common to both sexes, or exists only in the ♀. *Stenopsyche* is somewhat allied to *Hydropsyche*, and has the intermediate legs of the ♀ scarcely so much dilated as in that genus. They are large insects (sometimes nearly an inch and a half in length with the wings closed), and with remarkably long and narrow anterior wings (which are also much longer than the posterior), so that the long lanceolate form of the insect with closed wings must prove of decided advantage in swimming beneath the surface; but they also have very long slender antennæ, which must be somewhat in the way if held porrect, as would be the case when at rest in the open air.—R. McLACHLAN, Lewisham: Jan. 17th, 1885.

Notes on Goniodoma Millierella, Ragonot.—It is very true that the generic name of *Goniodoma* does not seem well adapted for an insect, whose case is composed of a flower-calyx, which is not at all angular; besides this, I may observe that the character assigned to *Goniodoma*, that the larva does not change to pupa within its case, "*metamorphosis extra saccum*," does not suit our *Goniodoma Millierella* any better, since I am very certain I have bred the moths from cases gathered singly, one at a time, amongst which I feel convinced I had no particle of dead stem into which they could have bored. I would not speak so positively had this only happened in a solitary instance, but as I bred in this way from 8 to 10 specimens, I am sure there was no room for error as to the conditions. My cases had not been left on the stems, they were gathered with only a small portion of the inflorescent sprig to which they were attached, and were placed in a little bottle of very small dimensions. Whilst writing this I look again at the cases I placed in the bottle as I gathered them, and I am satisfied that there is not amongst them any fragment of stem visible; hence, the creature must have undergone its metamorphoses within its case. Next, as to the question of referring these insects to the genus *Coleophora*, I would observe that they do not carry the antennæ in the true *Coleophora* fashion;* they are never directed in front, nor are they placed close together, but they are always thrown backwards and laid on the back when the insect is at rest. The antennæ, besides, seem to me rather longer, more slender and more flexible than is usual in the genus *Coleophora*. During the winter I will search amongst the stems of *Statice virgata*, to see if I can find some tenanted by *G. Millierella*, for up to the present time I have only obtained it from larvæ, which had not quitted their cases.—A. CONSTANT, Villa Niobe, Golfe Juan (Alpes Maritimes), France: November 24th, 1884.

Habits of Ephippiphora tetragonana.—I was much pleased to read that Mr. Sang had bred this species (see *ante*, p. 191). I will now give a little of my experience bearing on his discovery.

In 1878, I was staying at the Waterloo Gardens, Windermere; a rose-tree covered one part of the house next to the lake. It was a very hot afternoon, and I was busy picking *Nepticula* larvæ off the rose-tree, when I spied a fine *E. tetragonana* sitting on a rose-leaf close by, then another, and then another (in all 3),

* Mr. G. Coverdale had also noticed this of *limoniella*.—H. T. S.

came and settled on the tree. I left the place, where, evidently, I ought to have stopped, to search on various plants amongst the undergrowth, and I saw no more of them. Now I come to reflect on my past experience of the insect, I find that wherever I have taken *E. tetragonana*, there have been rose-bushes about; I had expected it to have been a stem or root-feeder.—J. B. HODGKINSON, 15, Spring Bank, Preston: February 12th, 1885.

Correction concerning Scoparia cratagalis.—I am very sorry indeed to have to correct a rather serious error on page 101 of the present volume of the Ent. Mo. Mag. The fact is that all the imagos which emerged from the lichen-feeding *Scoparia* larvæ sent me by Mr. W. H. B. Fletcher did so whilst I was away from home in the summer, and on my return were worn to shreds, and dead. Mr. Fletcher had written to me that his lots of larvæ had produced *Scoparia cratagalis*, and on a close examination of the remnant of mine, I was satisfied they were that species, and should, I think, have believed them to be so, even if Mr. Fletcher had not written to me that his larvæ had produced it. My astonishment may be conceived then, when, a few days ago, Mr. Fletcher wrote, asking me to re-examine my specimens, as he feared he had misled me in saying they were *cratagalis*, for, on recently placing them in his cabinet, he became doubtful about them, and, indeed, made them out to be *lineola*. I was then only able to find one specimen, which I was certain had come from those larvæ, and though a very worn one, it still seemed to me more like *cratagalis* than anything else; so I at once wrote to Mr. Fletcher, requesting him to send me a couple of his good specimens for examination. He has just done so, and they are, undoubtedly, *lineola*. It is an unfortunate error, which none can regret more than Mr. Fletcher. In my own copy of the Ent. Mo. Mag. I have crossed out "*cratagalis*" from the heading, and written "*lineolalis*" in its place; and that seems to me to be the best course to adopt.—GEO. T. PORBITT, Huddersfield: February 12th, 1885.

ENTOMOLOGICAL SOCIETY OF LONDON.—December 3rd, 1884: J. W. DUNNING, Esq., M.A., F.L.S., in the Chair.

Baron C. R. Osten-Sacken, of Heidelberg, was elected an Honorary Member, and J. J. Walker, Esq., R.N. (formerly a Subscriber) an Ordinary Member.

Mr. Stainton exhibited specimens of *Goniodoma Millierella*, Ragonot, bred by M. Constant from *Statice virgata* near Cannes, together with continental *G. auroguttella*, F. v. R., from *Atriplex laciniata*, and British *G. limoniella*, Staint., from *Statice limonium*, for comparison.

Mr. H. Goss exhibited *Bankia argentula* from a new locality; it had been bred by Mr. Brown from a larva feeding on a *Poa*.

Mr. Jenner Weir exhibited (on behalf of Mr. Lovett) a collection of *Micro-Lepidoptera* from the vicinity of Graham's Town in the Cape Colony.

Mr. Billups exhibited 44 species of Aculeate *Hymenoptera* from Chobham, captured in 1884, and also a long series of interesting *Ichneumonidae*.

Mr. Olliff exhibited the remarkable Cucujid (*Aciphus singularis*) described by him in this Magazine, *ante* p. 152.

The Rev. L. Bloomfield sent a notice respecting the presumed occurrence of

Astynomus ædilis at Bath, but Mr. C. O. Waterhouse pointed out that the insect was in reality a North American species of *Monohammus*, which had no doubt been bred from imported timber.

Mr. McLachlan exhibited the Caddis-fly from Unst, described by him in this Magazine (*ante* p. 153) as *Mesophylax impunctatus*, var. *zetlandicus*, and also *M. aspersus*, and its var. *canariensis*, for comparison.

Mr. H. J. S. Pryer communicated a paper treating casually on Mr. Lewis' views as to the origin of colour in insects, and particularly on two remarkable instances of mimicry in insects from Elopura, North Borneo. In the one case a large Longicorn beetle, *Nothopeus fasciatipennis*, C. O. Waterhouse, with abbreviated elytra, but with broad hind-wings, almost precisely mimicked *Mygymia aviculus*, Sauss., a species of *Sphagida*; in the other case, a large Lepidopterous insect described by Mr. Butler as *Scoliomima insignis* (new genus and species) mimicked *Triscolia patricialis*, Burm., a species of *Scoliada*. A long discussion ensued, in which several members joined, Mr. C. O. Waterhouse and Mr. Butler pointing out various other cases of mimicry in insects.

January 21st, 1885 (ANNUAL MEETING).—The President in the Chair.

The following Officers were elected for 1885, viz., R. McLachlan, President, E. Saunders, Treasurer, E. A. Fitch and W. F. Kirby, Secretaries, F. Grut, Librarian; and the following other members of Council, viz., T. R. Billups, J. W. Dunning, H. Druce, H. Goss, R. Meldola, J. W. Slater, S. Stevens, and J. J. Weir.

Mr. Dunning, the outgoing President, read an Address, which was ordered to be printed; thanks were voted to the Officers, who severally replied; and the Meeting terminated.

February 8th, 1885: R. McLACHLAN, Esq., F.R.S., President, in the Chair.

The President thanked the Society for the honour that had been conferred upon him, and nominated Messrs. Dunning, Stevens, and Weir, as Vice-Presidents for the year.

Messrs. H. P. James, of Valparaiso, and H. C. Sanders, of Cleveland Place, Hyde Park, were elected Members.

Mr. J. W. Slater exhibited a specimen of *Lycæna chryseis*, one of three that he was informed had been taken in July, 1878, by Mr. Mutch, in Culter Marsh, Aberdeenshire. Mr. Stainton said that the former records of this insect as British were of ancient date and uncertain authenticity, and that it was very desirable to see more examples from Aberdeenshire and in better condition. Mr. Elwes stated that the specimen resembled the variety known as *Stieberi*, Gerhard, occurring in Lapland.

The Rev. A. Fuller exhibited insects of various Orders collected by him in America on the occasion of the visit of the British Association to Canada in 1884.

Mr. W. Cole exhibited a remarkably perfect nest of *Vespa norvegica* from Epping Forest, and remarked that a friend had, to the best of his belief, obtained a wasp from the same nest that proved to be *V. sylvestris*.

Mr. de Nicéville sent for exhibition (through Mr. Distant) several Butterflies, mostly *Satyridae*, from Calcutta, and remarked on the difference in the size of the ocellated spots on the under-side of the hind-wings in the wet or dry seasons brood, which had caused these different broods to have been described as

distinct species. These spots appeared to become fully developed in the dry season only. Mr. Elwes had observed that in Butterflies common to Europe and Japan the latter had the ocellated spots much the larger. The President expressed an opinion to the effect that the present rage for "species making" in *Lepidoptera* could only result in the authors of these so-called species being debited in the long run with having created a host of synonyms to no purpose.

Mr. Stainton exhibited specimens of *Chaulioides insecurellus* from Gascony, bred by M. Constant from *Thesium divaricatum*, and remarked that the localities (Sanderstead, &c.) in this country where the species had been taken were precisely those given for our *Thesium humifusum*. He had no doubt the insect fed on the latter plant in England.

Mr. Billups exhibited a long series of *Hemiptera* and parasitic *Hymenoptera* taken at Headley Lane on January 3rd; also a pair of *Ranatra linearis* from Loughton on January 16th at a spot where no water was then present.

A letter was read asking the opinion of the Society as to what list was to be preferred in arranging and naming collections of British *Lepidoptera*. Several Members addressed the Meeting in support of their own views, but it was generally considered that any recommendation on this point was outside the province of the Society.

Herr Buchecker exhibited a large series of drawings of *Hymenoptera*.

Mr. E. A. Butler exhibited a series of egg-cases of *Mantida* from Bechuana-land, of the same type as those exhibited at the Meeting on 1st December, 1883, (*cf.* Ent. Mo. Mag., vol. xx, p. 263), and in one instance apparently identical therewith.

Mr. Lewis communicated a paper on a new genus of *Histerida* (*Niphonius*), of which four species occur in Japan, and remarked on the peculiar structure of the prosternum, &c., which showed its affinity with *Hister*, and its differentiation from *Syntelia*.

Mr. G. F. Mathew communicated life-histories of *Papilio Godeffroyi* (Fiji), *P. Schmeltzii* (Samoa), and *Xoia Sesara* (Fiji).

Obituary.

Edward Caldwell Rye, F.Z.S.—For the first time in the course of twenty-one years death has claimed one of the editors of this Magazine, one who had been associated with it during the whole of its career: the familiar "E. C. Rye" disappears from its cover. Mr. Rye died at Stockwell on February 7th, after a very short illness, in the 53rd year of his age. He was born at 16, Golden Square, London, on April 10th, 1832, and was the eldest son of a solicitor. He was educated at King's College School, and subsequently was articled to his father, who intended he should follow the legal profession. So strong, however, were his objections to this profession, that he refused to qualify; but he continued in his father's office.

It is no secret that his aspirations lay towards obtaining a position in the Zoological Department of the British Museum, but it was long before a vacancy occurred, and then he was already too old. Subsequently he became managing clerk to a barrister in Lincoln's Inn. In the early part of 1875 the Librarianship

at the Royal Geographical Society became vacant; Mr. Rye applied, and was immediately accepted, and he held the post up to his death, with advantage to the Society and credit to himself. From early youth he showed great artistic talent, and this in part served him to occasionally add to his small salary as a lawyer's clerk; he particularly excelled in drawing entomological subjects on wood, the taste for entomology which he developed at a very early age largely aiding him; his drawings were those of an entomologist as well as an artist. As is often the case, his early entomological notes concerned *Lepidoptera*, and the earliest we can find appeared in the "Entomologist's Weekly Intelligencer," for May 9th, 1857 (vol. ii, p. 44). But his attention soon became concentrated upon British *Coleoptera*, and from the first he displayed not only much success in collecting, but also great acumen, and extensive knowledge of the published literature, and he continued to send notes on new discoveries, &c., to the "Intelligencer," and also to the "Zoologist." In the "Entomologist's Annual" for 1863 he commenced that well-known series of laborious and critical articles on British *Coleoptera* which continued to appear each year down to the close of the "Annual" in 1874, and in the volume for 1872 he also published an annotated List of the additions to the British Fauna from 1840 to 1871, in which he showed that practically 1100 species of beetles (!) had been added during that time: in this list Mr. Rye especially proved his talent for critical compilation, which stood him in such good service afterwards.

In the early part of 1864 a private meeting of friends was held to discuss the advisability or otherwise of starting the "Entomologist's Monthly Magazine;" it was decided to do so, and Mr. Rye was offered a position on the editorial staff, which he accepted; and such was his zeal, that articles and notes on British *Coleoptera* at once formed one of the leading features in our pages. All those who were associated with him at the commencement survive to deplore his loss, and although only two of the original editors continue to act, these readily testify in how great a degree his energy contributed to render a success that which at first was only an experiment. Latterly his multifarious duties caused him to practically abandon entomology, and a few years ago he sold his magnificent collection of British Beetles to Dr. Mason, of Burton-on-Trent, who, with characteristic liberality, places it at the disposal of all workers, both British and foreign. In 1866 a volume on "British Beetles," extending to 280 pages, with 16 coloured plates, was brought out by Mr. Rye, and published in Reeve and Co.'s popular series; it was accompanied by a Catalogue of our indigenous *Coleoptera*, and remains practically the only book on the same subject, treated in a popular as well as in a scientific manner. From 1869, and for several years, he furnished the article *Coleoptera* (and occasionally others) to the invaluable "Zoological Record," in which his talent as a compiler again asserted itself, and from vols. x to xx (the publication of the latter taking place only a few days before his death), he was sole editor, an onerous duty fulfilled with great tact. Apart from his ordinary duties as Librarian, he compiled the bibliographical portion of the Proceedings of the Royal Geographical Society, and aided the Society in many other ways. For many years he acted as one of the Natural History editors, and sole-editor for "Travel," on the "Field" newspaper, and latterly his other literary engagements were exceedingly numerous: his power for work seemed to increase with the demands upon it.

For many years he was Recording Secretary for Section E (Geography) at the meetings of the British Association. In 1859 he joined the Entomological Society of London, but subsequently resigned, and was re-elected in 1876. In 1874 he became a Fellow of the Zoological Society.

Mr. Rye's attention to British *Coleoptera* naturally caused an acquaintanceship with Mr. G. R. Waterhouse, formerly of the British Museum, who was then devoting all his spare time to the same subject. This culminated in his becoming engaged to Mr. Waterhouse's second daughter, whom he married in 1867, and who, with four children (the oldest under 17), survives to deplore his loss.

Mr. Rye was a good classical scholar, a good modern linguist, and generally of extremely versatile talent. In society he was known (and sometimes feared) for his ready and often caustic wit. From early youth he was passionately devoted to aquatic sports, and was a frequent prize winner in amateur racing matches on the Thames. On Saturday, July 30th, 1881, he suffered frightful injuries from his boat being crushed by a steamer; these crippled him for many months, yet in time he made a complete recovery, and even resumed his favourite pastime with all the ardour of youth, and at over 50 was still winning prizes. Little more than ten days before his death he complained of feeling unwell, which he attributed to a cold; but almost immediately smallpox of the worst type declared itself. He was removed to hospital. Almost from the beginning the case was desperate, and, although at one time there was a small gleam of hope, it soon subsided, and he passed rapidly away. How he contracted the disease no one knows, but it was believed to be prevalent amongst the floating population on the Thames.

It is pretty generally known that Mr. Rye's eldest sister is the lady whose name is so intimately associated with female emigration to Canada. His father and mother predeceased him, his youngest brother died barely two months ago, and there now remain an only surviving brother (who continues his father's practice) and three sisters.

Major F. J. Sidney Parry, F.L.S., of Onslow Square, died at his daughter's residence, The Warren, Bushey Heath, on February 1st, aged 74. In him the Entomological Society of London has lost one of its oldest members, he having been elected in 1840, and he became a Fellow of the Linnean Society in 1842. He was born October 28th, 1810. In 1831 he joined the 17th Lancers as a cornet, but retired from the army in 1835. His earliest published paper appears to have been on a new genus of *Lucanidæ* from New Zealand, communicated to the Entomological Society in 1843, and although he published on other families of *Coleoptera*, it was with the *Lucanidæ* that he became more especially associated, and on them he published numerous memoirs, the most important (but by no means the last) in the Trans. Ent. Soc. for 1870, to which he appended a revised List, enumerating 357 species. During the whole of his entomological career he had been associated by friendship with Prof. Westwood, who supplemented and illustrated several of his papers. At one time he had a general collection of *Coleoptera*, but latterly it was limited to *Lucanidæ* and *Cetoniidæ*, the former being very valuable, and probably the most complete in existence.

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J. CROCKETT

(LATE J. SCOTT).

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The February and March numbers contain the first instalment of *The Lepidopterous Fauna of Lancashire and Cheshire*, by J. W. Ellis.

All communications should be addressed to the Editors:

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DESCRIPTIONS OF SOME NEW SPECIES OF *LEPIDOPTERA*
FROM ALGERIA.

BY GEORGE T. BAKER.

Mr. Wm. Pech, of Budapest, who was collecting in Algeria during the first half of 1884, has recently sent me a very interesting collection of the *Lepidoptera* then taken, among which are several species which have been submitted to Dr. Staudinger, and have been pronounced by him to be new, these Mr. Pech has kindly asked me to describe. From February to the end of April he worked the neighbourhood of Lambessa, and, for the remainder of his sojourn, Guelma (which is a good deal nearer the Mediterranean) was his head quarters. As I hope later on to give a detailed account of his captures, I will now, without further remark, describe the species new to science.

ANTHOCHARIS PECHI, *n. sp.*

Ala antica et postica alba, puncto discoidali, et cum apice griseis. Infra, ala antica, apice sulphureo-virescente, ala postica sulphureo-virescentes, nigro fortiter irrorata, macula centrali parva albida.

In the ♂ the wings are white above, the posterior ones looking slightly greyish on account of the darker under-side showing somewhat through. The base of all the wings is rather greyish. The apex and discoidal spot of the anterior-wings are grey, the latter being the shape of an irregular parallelogram. In the grey apical patch before the tip is a small, indistinct whitish spot. The costa from the base to the discoidal spot is broadly greyish.

Beneath. The apex of the anterior-wings is greenish-yellow, finely irrorated with dark grey, the discoidal spot which appears through, but faintly, is pale grey, with a whitish crescent in it. The posterior-wings are greenish-yellow, more intensely irrorated with blackish, and have a single small whitish spot in the centre. The fore-part of the thorax by the head is very pale yellow. The antennæ are grey, tipped with lemon colour. The fringes are white, greyish by the apex.

This description applies also to the ♀, but the markings are all darker, and the apical patch and discoidal spot are larger, while in the former there is the faintest trace of the usual transverse spotted band. The extreme apex is also slightly greenish. The ♂ measures 32—33 mm.; the ♀ 36 mm.

This species, which I name after its captor, is a near ally to *Charlonia*, Donzl. (*Penia*, Frr.), and will immediately precede it. Only five specimens (three ♂ and two ♀) of this pretty *Anthocharis* were taken, which were caught at Lambessa in April. A ♂ and ♀ are in my collection. *A. Pechi* can be readily distinguished from *Tagis* by its smaller size, and by the apex and discoidal spot being much greyer, also the white spots in the dark apical patch of *Tagis* are wanting in *Pechi*.

Beneath, the apex and hind-wings are yellow and unmottled in the present species, while in *Tagis* both are considerably mottled.

From *Charlonia*, its nearest ally, the ♂ differs in that its colour is quite white, while in the former the wings are very faintly tinged with yellow. The apical patch, which is brownish in *Charlonia*, extending down the posterior margin nearly to the anal angle, and being distinctly spotted, is, in *Pechi*, grey, scarcely reaching more than half way down the posterior margin, and is without the transverse spots. The discoidal spot in *Charlonia* is large and dark brownish, but in our species it is decidedly smaller and pale grey, also the anterior margin is not pink, as in *Charlonia*, and the fringes of the fore-wings, which in the latter insect are tinged with yellow, and intersected with brownish, are in this white.

Beneath, the apical patch and hind-wings are greener in *Pechi*, than in *Charlonia*. The white of the fore-wings in the latter is tinged with yellow, especially by the costa, but in ours it is pure white, also the discoidal spot, which in *Charlonia* shows through very distinctly, and is almost black, appears through in *Pechi* very faintly, and is pale grey with a whitish crescent in it. The fringes of the fore-wings have in the present species a slightly greenish hue beneath, but in *Charlonia* have a good deal of pink in them. Further, the hind-wings of the former have only a single, small, whitish, central spot, whereas in the latter insect there are several whitish spots in the hind-wings.

BOMBYX LOTI, var. ALGERIENSIS.

I believe this pretty little *Bombyx* to be only a local form of *loti*, and have therefore so named it, as it is certainly worthy of being a named variety. The ♂ is of an uniform reddish-brown; the anterior-wings having a central white spot, and a sharply and continuously toothed white line, starting from beyond the middle of the inner margin, and reaching nearly to the costa, somewhat in front of the apex.

The ♀ is also unicolorous red-brown, but with scarcely even an indication of the central spot, and no transverse line.

Expanse of wings, ♂, 27—28 mm.; ♀, 40 mm.

A fair series of this insect was taken at Guelma in June, two ♂ and one ♀ being now in my cabinet.

The ♂ differs from *loti* in the white transverse line being continuously toothed, while in the latter insect it is not toothed at all. The difference in the ♀ is more marked, as in *loti* the colour is uniform greyish, but in var. *algeriensis* it is entirely reddish-brown.

BOMBYX STAUDINGERI, n. sp.

Alae omnes pallide flavo-ochraceæ, non fasciatae.

Of this new *Bombyx* several larvæ were found at Lambessa in March, which

were of a grey colour with red markings. The imago is of an uniform and very pale drab-straw colour, without any markings whatever, the posterior-wings are of a slightly warmer hue than the anterior. Expanse of wings, 47 mm.

Only two ♂ of this insect were reared, which came out in September (the fumigation for cholera having killed most of the pupæ), and of which I possess one specimen.

I name this species after the well-known entomologist, Dr. Staudinger; it should, I think, precede *trifolii*, which is its nearest ally. Though *trifolii* has some very pale varieties, I know of none to compare with the paleness of this: its anterior-wings are also narrower than in that species, and the apex and hind-margin are rounder; further, the posterior-wings are not so full as in *trifolii*. Though the expanse of wings is greater than in *trifolii*, ♂, generally, it is a more elegant species, and is not so robust looking as that insect.

ACIDALIA MAURITANICA, n. sp.

Alæ omnes rubræ, griseo-irroratæ, macula centrali parva nigra in omnibus alis, alæ anticæ macula costali nigra ante apicem.

This species is of a pale pinkish-clay colour, finely irrorated all over with dark grey, with the central dark spots on the anterior and posterior-wings very distinct, there is also a distinct dark spot on the costa in front of the apex. The first dusky line near the base is almost obliterated, though its position is indicated by three indistinct greyish dots, two of which are near the costa, and one on the inner margin, there is scarcely a trace of the central line just beyond the spot, the dusky irrorations form an indistinct curved sub-terminal line, in which are four or five small darker dots, this is followed by a fine waved lighter band of the ground colour. The marginal line is also composed of the dusky irrorations. The hind margin is finely and darkly dotted.

The hind-wings are rather paler, but with similar markings to the fore-wings. The fringes are pink, lighter at the edge. Head, thorax, and abdomen, same colour as the wings. Expanse, 23 mm.

Of this insect, which will, I think, come next to *cervantaria*, only two specimens were taken at Guelma in June, one of these is now in my collection.

All the markings in this species are formed by the dusky irrorations, and are throughout very indistinct. Its general look is pinkish-red, slightly irrorated all over with dark grey.

ACIDALIA VIRGULARIA, var. AFRA.

This insect is so close an ally to *virgularia*, that I cannot look upon it as a new species.

The ♂ is grey, with the central dark spots very indistinct; the darker basal space is edged by the first line which is dark grey, waved, and arises in a dark spot

on the costa, terminating in a similar one on the inner margin. The central line is less distinct, but is more defined than in *virgularia*, the sub-terminal line is not dotted, as in that species, but is a frequently-toothed, well-defined, dark grey stripe, and is followed by a darker shading, which is edged on the outside by a light curved band. Hind-margin dotted with black. Fringes grey.

With the exception of the first line, the markings are all continued through the posterior-wings, but the sub-terminal line is very dark and broad. In the ♀ the colour is paler, and all the markings less distinct, except the central spots, which are more sharply defined, and the sub-terminal line, which is dotted somewhat as in *virgularia*. In this sex, the shape of the posterior-wings differs from that insect, the hind-margin having semicircular dentations, making their outline almost angular, and the marginal black dots form an almost continual line.

The ♂ measures 20 mm., the ♀ 22 mm.

Only two specimens of this insect were taken at Guelma in June, both of which are in my collection.

ACIDALIA TERENTIUS, n. sp.

Ala omnes, ochraceo-brunnea, lineis medianis et sub-terminalibus parallelis, brunneis. Ala antica apice sinuato.

This species is of an ochre-brown colour, the basal space being darker brown. The median brown line is parallel with the broad sub-terminal line of the same colour, both being almost parallel with the hind-margin, and extending from the costa up to the inner margin; these two lines are also continued through the posterior-wings, but are less distinct. The hind-margins of the anterior and posterior-wings are bordered by a distinct dark line. The fringes, which are exceptionally long, have the basal half darker brown, with paler extremities. There is a slight gloss over all the wings. The thorax and abdomen are brown; antennae paler brown. The apex of the anterior-wings is rather sinuate.

Only two specimens were taken at Lambessa in April, one is in my collection; it measures about 13 mm.

LYGIA JOURDANARIA, var. OBSCURA.

Anterior-wings umber-brown, with all the white markings of *Jourdanaria* replaced by a paler brown colour. The hind-wings are also of a browner hue.

In the ♀ the ground-colour is paler than in *Jourdanaria*, with the white markings also replaced by paler brown ones.

Jourdanaria was common at Lambessa in April, and existing with it was this almost unicolorous variety which, being constant and not uncommon, is well worthy of a distinctive name. I possess a ♂ and ♀.

EUPITHECIA ARTEMISIATA, Const., var. CONSTANTINA.

Anterior-wings brownish-grey, the first darker band, edged on the outside with white, is sharply angulated near the costa, and is very distinct, in front of this (i. e., near the base) are one or two more or less distinct paler lines. Before the median stripe, which is narrower and edged on the outside by a double white line, is a

whitish, somewhat indistinct, line. The dark sub-marginal line, also edged posteriorly with white, is finely and frequently toothed, and extends from just in front of the apex into the anal angle. The sub-costal, median, and inner marginal veins are reddish, and intersect all the markings.

The grey posterior-wings have the median and sub-marginal lines darker, and a central dark spot, which latter is wanting in the anterior-wings. The hind-margins of both the anterior- and posterior-wings have a white-spotted line edged interiorly by a dark spotted line.

The fringes are grey, tessellated with brown, and sometimes have a pale divisional line.

The ♂ measures 19—20½ mm.; the ♀ 20—21 mm.

The ♀ presents no difference from the ♂, except that it is rather stouter, and the white lines are throughout more marked.

This species was common at Lambessa in March. I possess four specimens. Dr. Staudinger tells me that he thinks this may be a local form of *artemisiata*, Const., if so, it will rank as a variety of that species; it may, however, prove to be itself a good species.

(To be continued.)

ON THE DISTINCTNESS OF *AULOCERA SCYLLA* FROM *A. BRAHMINUS*.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

In the fourth volume of this Magazine (p. 122), I described a species of *Aulocera* under the name of *A. Scylla*, the habitat for which was given in our register as near Silhet, and I mentioned that I had seen three specimens of the species.

In the same volume, at p. 247, Colonel Lang described a second species under the name of *Aulocera Werang* from the Werang Pass, Upper Kunawur and from Kashmir.

The species described by Lang turned out subsequently to be the same as that figured by Blanchard as the male of his *A. brahminus*, which name, therefore, superseded it.

In the first volume of their work on the Butterflies of India, Messrs. Marshall and De Nicéville regard *A. weranga* (sic) as a variety of *A. brahminus*, and *A. Scylla* as a second variety scarcely separable from it: they make the following observations regarding the two so-called varieties:—

“Colonel Lang in describing *A. weranga* writes, that, ‘it differs from (the description of) *A. Scylla* by its paler colour, larger size, more sinuated margins, and the want of the exterior series of white, black-encircled spots; the whitish dots of *A. weranga* being only two or three in number, very small and indistinct.’ Mr. Butler adds.

'the two species are nearly allied, but I think quite distinct: another point of difference being that 'the veins on the under-side of the hind-wing in *A. Scylla* are powdered with whitish scales.' We are quite unable to separate *A. Scylla* from *A. brahminus*; it is described from 'near Sylhet,' and if that locality could be accepted definitely, there might be some grounds for its separation; but the authority for the habitat rests apparently on a very slender basis, and some specimens of *A. weranga* from the N.W. Himalayas present every feature that is given as distinctive of *A. Scylla*; it is doubtful whether it can even be retained as a distinct variety."

It must be borne in mind that when writing the above neither Major Marshall nor Mr. De Nicéville had examined the type of *A. Scylla*; when the latter gentleman saw it a few months ago, he jumped to another hasty conclusion and decided that it was nothing but an under-fed specimen of *A. Werang*. Few things can be more detrimental to the study of any branch of science than guessing. This has been shown in the present instance, and can be still more easily proved in the case of Mr. De Nicéville's recently ventilated views touching seasonal variability, which a little calm reflection would have convinced their author to be impracticable; first, because some of these so-called seasonal varieties never yet were taken in the same localities, and others, as *Junonia Almana* and *J. Asterie*, are all caught flying together at the same time, also *Melanitis Ismene* and the so-called *M. Leda* (for which I propose the name *M. determinata*; as the true *M. Leda* is a totally dissimilar Amboinese species), come constantly from all collectors who pay any attention to details in their collecting, labelled with the same date of capture; Col. Swinhoe also assures me that in both of these instances the supposed seasonal forms fly together.

In a collection received from Mr. J. F. Duthie early in 1884, there were four examples of *A. brahminus*, three of which were labelled "Phulaldaru, 12,000 feet, August 15th and 16th," the fourth "Ravee Basin, up to 6,000 feet," the latter agrees best with Lang's type of *A. Werang*, as I remember it, the band across the wings being narrower than usual.

Towards the end of 1884 we received a second collection from Mr. Duthie, in which are two examples of *A. Scylla*, labelled "near Kutti, 13-14,000 feet," in the same collection several much worn examples of *A. Swaha*, labelled "Kutti Yangti Valley, 11-12,000 feet." It is therefore clear that the locality "Silhet" was, at any rate, if not quite correct (which remains to be proved), by no means so far out as Messrs. Marshall and De Nicéville imagined, and as the whole of the

differences pointed out, such as size, form, marking, white veining, &c., are constant, there is every evidence that *A. Scylla*, instead of being regarded as even a doubtful variety, is a good and constant local form, or, in fact, a distinct species.

In conclusion, I would recommend all Entomologists to beware of excitement about any new craze: a few years ago every unusual patch on a wing, every tuft on any part of an insect, was at once labelled either as some form of scent-bottle or musical box for the delectation of Madame Papilio; in some cases there was sense in the suggestion, but in nine cases out of ten the most pitiable nonsense: now a new craze has arisen; wheresoever in any genus two species stand a little apart on account of intermediate links not having yet been collected, the Lepidopterist pounces upon them as probable seasonal forms; whereas, when one really knows anything of any genus of *Lepidoptera*, one finds that all the representatives of that genus are reduced to very slightly differentiated local races.

British Museum: *February*, 1885.

DESCRIPTION OF TWO NEW SPECIES OF BUTTERFLIES.

BY H. GROSE SMITH.

PAPILIO SYCORAX.

Upper-side. Anterior-wings olive-brown, the longitudinal rays in the cell, the nervures, and broad bands between the nervures dark olive-brown. Posterior-wings: the inner half somewhat greener than the anterior-wings, the outer half greenish-grey, in the middle of which between the nervures is a row of five large conical black spots, the two upper spots extending to the cell on the inner side; on the outer margin are five, large, black, quadrate spots confluent on the outer margin, the spot nearest the upper angle is also confluent on the inside with the upper spot of the central row. The outer margin ashy-grey, deeply indented between the nervures.

Under-side. Both wings as above, but much lighter, and the outer row of spots on the margin of the posterior-wings are distinct. Head and collar ashy-grey. Abdomen greenish-grey above, underneath orange, two rows of black spots on either side.

Exp. 6 in.

Hab.: Sumatra (Bock).

A grand insect, nearest to *P. Priapus*.

CHARAXES VIOLETTA.

Upper-side. ♂. Anterior-wings dark brown, suffused slightly with violet, with a curved row of violet-blue spots across the middle of the wings, and a sub-marginal row of similar spots from near the costa to the inner margin, the lower half of the two rows becoming confluent, the two sub-marginal spots near the apex nearly white. Posterior-wings with a broad central band of violet-blue, suffused with white from the second sub-costal nervule to the abdominal fold near the anal angle; above this band are two pairs of violet-blue spots, a sub-marginal row of seven small spots; and

a row of elongated spots on the margin on each side of the nervules, all violet-blue suffused with white. ♀. Anterior-wings with a broad curved band across the centre of the wings from the costa to the inner margin, and two white transverse spots near the apex. Posterior-wings: the inner half, from near the base, white, suffused with violet, a sub-marginal row of small white spots, and a marginal white line intercepted by the nervures, both suffused with violet.

Under-side. Both wings as in *Ch. Cithæron*, except that the central black line across both wings, which is broadly bordered on the outside with white, is straight and continuous, not irregular and interrupted as in *Cithæron*. This species on the upper-side has a general resemblance to *Cithæron*, it is more violet-blue, and is smaller in size, particularly the female, which is not so large as the male *Cithæron*, while the under-side of both sexes is very distinct from *Cithæron*. Exp. 3½ in.

Hab.: Delagoa Bay.

London: *February*, 1885.

THE LIFE-HISTORY OF *ASOPIA* (*PYRALIS*) *FARINALIS*.

BY THE REV. J. HELLINS, M.A.

In his prefatory remarks on *Pyrallis*, Guenée wrote that nothing showed the negligence of entomologists more plainly than their ignorance of the metamorphoses of the species placed by him in that genus; and, to say nothing of the appearance of *farinalis* in one's house, certainly to see the moth, as I have, sitting by hundreds on the walls of a mill, one would think it was easy enough to find the larva: yet the late Mr. Buckler, living in a house with a flour-mill attached to it, met with considerable difficulty in obtaining the larva of this "Mühlgänger," as Dr. E. Hofmann calls it: it was not to be found on the floors, but had to be hunted out very carefully under projecting ledges of portions of the machinery, where it could form its galleries in safety; he obtained a few examples also from a stable, where they were feeding in company with *A. pinguinalis* on mixed rubbish well hidden under an oat-bin.

Farinalis may fairly be called a domestic insect, and, contrary to the more common lot of *Lepidoptera*, it has rather profited than otherwise from human progress: as one can scarcely conceive of any natural collection of seeds or stalks which would nourish it in such numbers as may now be seen.

The moth, I know, begins to appear towards the end of June, and continues its flight through July and August; the larva apparently is hatched in less than a month after the egg has been laid, and, as Mr. Buckler told me he had satisfactorily ascertained, lives through two winters, becoming a pupa in May or June of the second year; and the pupa state lasts about a month.

The egg is rather long oval in outline, somewhat flattened, about .65 mm. long, and .35 mm. wide; the shell very thin and soft, finely granulated or wrinkled all over, glistening, in colour dirty white.

The newly-hatched larva is about 1.45 mm. long, with pale brown head, the body dead white, the usual bristles colourless and long.

The full-grown larva is about 25 mm. long when walking, between 22 or 23 mm. when at rest; stout in proportion, and cylindrical in figure; the head small and horny, the second segment, which is rather long, tapering rapidly to it; the thirteenth segment also tapers away rapidly; the segmental divisions well-marked; the folds between the thoracic segments complicated as in *cuprealis*; each of the remaining segments with an intermediate fold at about two-thirds of its length from its front edge; the head in colour chestnut-brown, very shining, with the mouth blackish; the second segment paler brown, rather inclining to yellowish; the anal plate also yellowish-brown; the rest of the skin most delicately shagreened, and in colour bone-white, the belly whiter; there is, however, a blackish tinge over the anterior and posterior segments which, throughout the life of the larva, serves (together with its stouter figure) to distinguish it from *Æcophora pseudospretella* and *Endrosis fenestrella*, which swarm where it is found; the dorsal vessel is also distinguishable by its darker tint; the usual dots are small and indistinct, surrounded by small pits, and furnished each with a short brown hair; the trapezoidals arranged (as in *Aglossa*) almost in squares; near the front edge of each of the middle segments is a transverse row, interrupted in the middle, of tiny shining foveæ, and behind it come short rows set longitudinally near the front pair of trapezoidals, and again near the hinder pair, there are also others below the spiracle; the spiracles are small, round, and margined with black; the thoracic legs are of the ground-colour, but tipped with chestnut-brown; the ventral legs whitish, with the circlet of hooks dark brown.

The larvæ I had were living in long tubes of dusty flour spun together rather toughly, and through which they could travel easily: from one of them I bred an ichneumon, named for me by Mr. Bridgman, *Exochus mansuetor*.

The pupa which I measured was about 10 mm. long, and not quite 3 mm. at its widest, in figure very cylindrical and plump, the wing-cases reaching just half its length; the tail ending in a blunt knob, without a spike, but set with a group of six curled-topped spines, arranged in three pairs of different lengths, the longest pair being straight, and the other two curved; the whole pupa-skin glossy, as if varnished; the wing-cases yellowish-brown, the abdomen redder, and the segmental divisions still darker: the cocoon inside fitted the pupa closely, and was made of tough white silk, well covered outside with rubbish, and not very regular in outline, about ten lines in length, and four in width.

Exeter: February 7th, 1885.

A NEW DRAGON-FLY OF THE GENUS *ANAX* FROM MADAGASCAR.

BY ROBERT McLACHLAN, F.R.S., &c.

ANAX TUMORIFER, n. sp.

Length of abdomen (*cum appendic.*), ♂, 63 mm., ♀, 60 mm. Length of posterior-wing, ♂ ♀, 53 mm. Expanse, ♂ ♀, 109 mm.

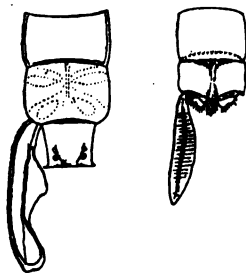
♂. Wings hyaline (not tinted). Neuration black (a few transverse nervules, near the base, brownish); costal nervure yellow externally. Membranule blackish, whitish at base. Pterostigma brown, rather short (5 mm.), very narrow. 18 antecubital and 10 post-cubital nervules in the anterior-wings. Face and mouth-parts yellowish (probably green in life); labrum regularly excised, the excision bordered with very pale brown. Top of front slightly produced, semi-circular anteriorly, where it is slightly margined by a greyish line; a large, nearly circular, black spot, not produced in the middle, but the outer edge with four or five not very distinct denticulations: vesicle black behind, yellow in front (with a crest of black hairs); for a short distance on either side is a narrow black line margining the eyes. Antennæ black. Occiput yellow, flat, triangular, slightly rugulose. Back of head yellow, margined with black above in the middle.

Thorax yellowish (probably green in living insects), with fine cinereous pubescence.

Legs shining black; anterior femora yellowish beneath; length of posterior femora, 10 mm.

Abdomen slender (not depressed), cylindrical, considerably swollen, and afterwards constricted, at base. Colour dark brown (altered), with indications of a black dorsal line, twice expanding on segments 4—7. Lateral impressions extending from segments 3—9 (but only faintly indicated on 3 posteriorly). Segments 9—10 slightly depressed, each slightly broader than long, and sub-equal. Segment 10 with a blunt central longitudinal carina, on either side of which are two foveæ, one posteriorly the other anteriorly, the latter being larger and deeper than the former.

Superior appendages long ($8\frac{1}{2}$ mm.), nearly equalling segments 8—10 united, piceous, somewhat castaneous internally; they are slender, and their outer edges



nearly straight up to the incurved apices; a strong raised keel above from the base to near the apex: the inner edge is at first straight, but somewhat before the middle it is enlarged into a very strong obtuse dilatation (the edge of this dilatation is granulose if viewed laterally), after which it is broadly excised, and again slightly dilated to the apex, which is very obtuse, incurved, viewed above it has a rather broad explanate margin beyond the elevated subapical portion: the upper surface is deeply concave between the central keel and the raised outer edge up to the elevated sub-apical portion; the lower surface shallowly concave, with the outer and inner edges much raised; the inner edge beyond the dilatation is double with a concavity between, somewhat resembling the lateral impressions on the abdomen. Inferior appendage

pale yellow, very short, nearly quadrate, scarcely extending to the commencement of the dilatation of the superior, hardly narrowed to the end, which is excised, with the angles upturned and produced into an acute black tooth; the lower surface is flattened with the sides strongly upturned, upper surface deeply concave; within each outer angle is an elevated black blunt tubercle, which, if viewed laterally, conveys the erroneous impression of belonging to the edge and not to the inner surface.

♀ (very adult). Generally similar to the ♂.

Wings very strongly and almost uniformly tinged with bright greenish-yellow (slightly paler at base and at extreme apex), which is sometimes more intense on the nervules, leaving the centre of the cellules paler. 18—19 ante-cubital nervules in the anterior-wings.

Back of head for most part blackish.

Abdomen stouter; the dorsal dark line more distinct: 10th segment transverse, its apical edge with a large transverse impression (or fovea) on either side of a median production, in which are about four short longitudinal impressed stræ.

Appendages very small (about $5\frac{1}{4}$ mm.), black, in the form of small flattened leaflets narrow at the base, with straight outer edge, and a slight central keel; apex acute. Valvules not exceeding the 9th ventral segment, black, provided with small and short reddish appendages, of which the second joint consists of several bristles.

[I think a second ♀ (with equally yellow wings) must belong here. It differs in the black spot of the top of the front being conical instead of nearly orbicular, in the slightly smaller wing dimensions (post.-wing, 50 mm.), and especially in the much shorter abdomen, which (appendages absent) is only 50 mm. long, without appearing to have lost any of its length (excepting the appendages), although it has been broken and mended.]

The figures represent the apex of abdomen of ♂ and ♀ (with appendages), from above, and the inferior appendage of ♂, from side, more enlarged.

Hab.: Madagascar.

The ♂ of this insect is essentially peculiar from the form of the anal appendages, and the ♀ from the uniformly-tinted greenish-yellow wings. The ♂ of *A. dorsalis*, Burm., from the Cape of Good Hope, remains, I think, unknown, but from Hagen's detailed description of the ♀ type (Verh. zool.-bot. Ges. Wien, 1867, p. 37), it cannot belong here, according to the form of the spot on the top of the front, the markings of the abdomen, and especially the colour of the legs.

From the same collection from Madagascar I have a ♂ *Anax* that it would be difficult to separate from *A. formosus*, but as has been already remarked with regard to South African examples, probably of this species, the body is slightly more slender, and the labrum margined with brown instead of black.

Lewisham, London:

March, 1885.

On the generic name Barsine.—Mr. A. G. Butler has called attention (Ent. Mo. Mag., xxi, 133) to the pre-occupation of the generic name *Barsine* by Walker, and suggested a new name for the genus of *Geometrina* which I had characterized under that name. However, I had already, in a paper read before the Philosophical Institute of Canterbury (N. Z.) in August last, and published in abstract in the New Zealand Journal of Science for September, pointed out that the genus named by me *Barsine* was truly synonymous with *Boarmia*, Tr., as defined by Lederer (whose work I had not previously been able to obtain, as explained in my original paper), and the genus which I had called *Boarmia* was therefore left without a title; the latter genus I renamed *Gelonia*. Mr. Butler's new designation for *Boarmia* is thus unnecessary.—E. MEYRICK, King's School, Parramatta, N. S. W.: January 14th, 1885.

Habits and description of the larva of Tortricodes hyemana.—Early in June last, I was examining an oak-bush in a hedge near here for larvæ, when, on opening a rolled-up leaf, I found a very striking brownish *Tortrix* larva, with a pretty spotted appearance. I did not find the species common, but collected a few from different parts of the bush, took them home, and placed them on a spray of oak in a small bottle of water, covering the whole with a bell-glass.

This is a very convenient method for observing the habits of small larvæ, as the food keeps fresh for a long time, and the larvæ live and make their habitations without being inconvenienced by the contact of the sides of the vessel which contains them. Their habits can also in this way be watched at any time without disturbing them. It is necessary, however, for this purpose to have good sized bell-glasses.

The larva is not of a very lively disposition, though when disturbed it makes some show of retreating, after the usual manner of Tortrices, but does not easily leave its house when touched. It is rather short and stumpy, and tapers somewhat towards each end: its length, when full-fed, is about 6 lines.

The upper portion of the larva is of a rather dull brick-dust colour, inclining to brown, with a dirty greenish tinge between the segments. This tinge, being apparently chiefly due to the presence of food in the intestinal canal, is not constant in its position or intensity, but is seen on different parts of the body at different times. It is more decided, as a rule, towards the head, and on the anal flap is present almost to the exclusion of the brick-dust colour.

The head is of a dull yellowish-brown, with the mandibles and palpi darker. The top of the second segment is of the same colour as the head, edged with whitish in front, and with a blackish margin at the sides. There is a distinct whitish dorsal line, and a less distinct line on each side below the first row of spots. The spots themselves are conspicuous from their prominence and size: they are whitish in colour, and have a small black dot in the middle, from which proceed inconspicuous hairs.

The under-side of the body is of a yellowish-white colour, on which a very slight tinge of brick-dust can be perceived in patches on the first few and last segments, the division between it and the upper surface being sharply defined.

The legs are blackish, as are also the hooks at the base of the claspers. The colour of the head is rather brighter at the sides of the under-part than above.

The larva turns down the tip of an oak-leaf, thereby forming a habitation of an irregular and somewhat conical shape, in which it lives until it has eaten the greater part of the leaf, but during this process it keeps its habitation intact. It then altogether deserts this leaf, and removes to another, and after having made another home for itself in the same way, it eats that leaf also. Thus, when nearly full-fed, a leaf of average size lasts it for board and lodging about two days.

It does not leave any frass in its habitation.

The larva is full-fed about the middle of June, when it quits its habitation and goes down into the earth, where it spins a very tough cocoon composed of earth and brownish silk, in which it shortly turns to a pupa. In this state it remains during the summer, autumn, and winter, emerging about March in the next year.

The pupa is rather dark reddish-brown in colour, with a transverse row of four spikes at the tail, and two rows of smaller ones on the back of each segment.

As the moth emerges shortly before the time when the buds of the oak are beginning to shoot, and as the larva does not seem to be at all gregarious, it may be presumed that the eggs are laid singly on the oak-buds.—NELSON M. RICHARDSON, Llangennech Park, Llangennech, R. S. O., Carmarthenshire: *March 14th*, 1885.

The larva of Phlaodes tetraquetra.—Probably most of us are familiar with this common larva, living late in the autumn under the turned-down edge of a birch leaf, but it is not, perhaps, so generally known that this is only the latter portion of its history, the manner of its earlier life being very different, and spent within a swelling on the twigs. These swellings are by no means conspicuous, which must account for their having been so commonly overlooked, and my own success in discovering them last spring was, no doubt, largely owing to the experience I had recently gained by the study of a very similar kind of growth, the work of *H. Servillana* in the willow shoots. At the time of discovery they were empty and deserted and the mine within commencing to be filled up by new growth, but on July 3rd I had the pleasure of finding newly-made swellings containing larvae about $\frac{1}{10}$ inch long. Fresh mines were opened from time to time, but their occupants were found to grow so slowly, that no attempt at collecting them was made until September 20th, on which occasion one or two having been found empty, I judged it advisable to delay no longer, and, therefore, brought home a handful of shoots, and placed them in water. Very shortly I found that an individual or so had left its mine, and was feeding upon the leaves; having constructed a small chamber by folding over a portion of the leaf. In time, all adopted the same practice, but in one or two instances where a leaf lay conveniently near, and the larva was able to reach it by spinning a short connection, I noticed that it continued for a little longer to occupy its old quarters. Hitherto, I had been much puzzled as to what they could be, but with their change in habit the mystery ceased, and to my surprise, as well as somewhat to my disappointment also, I recognised in the larva that I had been watching with such care the very common and widely-known *P. tetraquetra*.

The swellings occur on the young upright shoots in the heads of birch bushes. Like those of *Servillana*, they occupy the region of the buds, and also resemble them very closely in shape and general appearance, but are smaller. It is, I think, worthy of notice that in both the growth takes place rapidly, and appears to reach its full

development whilst the larva is still very young, agreeing in this respect with the usual history of gall-formations. The short internal mine measures half-an-inch in length, and sometimes less. It is quite free from frass, and the mouth, situated at the upper end, is protected by a firm, neatly constructed, tube of frass, that extends for one or two lines along the surface of the growth. It might be supposed from its abundance, that it would prove an injurious insect, but this scarcely seems to be the case. In no instance have I known the shoot killed, though occasionally its growth appears to be checked, and an increased tendency shown to the development of side twigs. The cavity gets filled up in the following season, and the enlargement is also in time outgrown. Neither does it lead to injury by inviting the attacks of insect-feeding birds; similar kind of food is plentiful enough elsewhere at that time of year, and far more get-at-able, and they seem entirely to have passed over this supply, which is quite the opposite to what happens in the case of *Servillana*, where, at least, one half the mines get torn open in the hungry months of winter.

The full-grown larva is rather stout, cylindrical, tapering somewhat behind, pale yellowish-green. Head dark or pale brown. Thoracic plates also dark or pale brown, with a darker edging behind, and a pale line down the middle. Anal flap yellow. Legs brown. Spots distinct, dark brown or black—they are said in the "Manual" to be whitish. The posterior trapezoidals are considerably smaller than the anterior, and are occasionally absent, or, I should rather say, want the usual dark pigment, in which case the anterior pairs are correspondingly small. Whilst a resident in the twigs, the chief points of difference are that the larva is more slender of shape, rather transparent, with a pulsating red dorsal vessel and reddish tinge over the body. Some years ago I found four or five specimens of a variety, having a broad, but rather faint, red line running along the sub-dorsal region from the 2nd to the 13th segments, inclusive. They produced typical *tetraquetra*. It appears to remain within the stem until after the last moult, growing very slowly all the time, but directly it begins to feed upon the leaves a rapid and great increase of bulk takes place, and in a week, or rather longer, it becomes full-fed. It spins up among rubbish, and changes to a pale red pupa.—JOHN H. WOOD, Tarrington, Ledbury: February 6th, 1885.

Coleophora potentilla, Boyd, in lit.—The larvæ of this species I have known for the last two years, but always thought they were those of *C. paripenella*, for knowing what a general feeder *C. paripenella* is, and finding it feeding on birch and bramble, under which bushes this same shaped but lighter coloured *Coleophora* was feeding on *Potentilla tormentilla*, I concluded they were the same species, and that the very light colour of the cases was due to the food-plant; but in September of last year, Mr. Fletcher, of Worthing, wrote to me saying he was taking nearly full-fed the larvæ of an undescribed *Coleophora*, feeding on *Potentilla tormentilla*, and very kindly offered to send me some, and also went on to describe the history as worked out by Mr. Boyd; the description he gave so agreed in every respect with the larvæ I had noticed on the same plant, that I went at once to Wanstead, found some larvæ, and sent them on to Mr. Fletcher, who at once pronounced them to be cases of *C. potentilla*; I also found these larvæ at Walthamstow and Snarresbrook in most of the sheltered places, under patches of brambles where the food-plant was growing; they seem to be pretty well distributed all over that part of Epping Forest.

The above few facts show how necessary it is to publish the history or any information concerning new species as soon as possible, for had not Mr. Fletcher written to me as he did, I should have been perfectly ignorant there was any such species in existence; and as many of my correspondents have since seeing the name on my list asked me what the species was, it is very probable the above communication may be interesting and useful to many others who collect the Micros.—GEO. ELISHA, Shepherdess Walk, City Road, N. : *January, 1885.*

Larva in Nut Catkins, &c.—I now add a description of the larva mentioned at p. 203, which I have hitherto been unable to breed. Larva about half an inch long, dusky pale greenish; head and plate on second segment brownish-black; when the larva is younger the head and plate (which appear united) are unusually large, and suggest the idea of a diving helmet. This disproportion is the more apparent if the larva is at all stinted of food. In the earlier stages of growth the head is the largest part of the larva, which tapers gradually from the third to the last segment; the posteriorly attenuated appearance being still further increased by the anal legs projecting behind almost to a point. Anal plate small, and slightly darker. A dark shining spot at top of anal legs; front feet dark. When full grown the head is not so disproportionately large, nor is it so dark, and the back of the larva is faintly suffused with a smoky tinge.—A. BALDING, Wisbech : *January 14th, 1885.*

Chauliodes insecurellus and C. pontificellus.—The interesting discovery of the larva of *Chauliodes insecurellus* on *Thesium divaricatum* in Gascony, for the knowledge of which we are indebted to Mons. A. Constant, may not improbably help us to find the larva of its congener, *C. pontificellus*. This conspicuous large *Chauliodes* seems by no means uncommon in many parts of Germany and Switzerland; I have myself seen it in plenty near Ratisbon, but hitherto, strange as it may appear, the larva of so common and striking a species has altogether escaped discovery.

Von Heinemann informs us "Schmetterlinge Deutschlands und der Schweiz, Abth. ii, Band ii, Heft 2," p. 410, that "Frey suspects the larva to be on *Thesium montanum*; Rössler that it is on *Sarothamnus*."

I must say that I think the occurrence of the larva of *C. insecurellus* on a *Thesium* lends great weight to the probable correctness of the conjecture attributed to Professor Frey, which, however, I do not find mentioned in Frey's "Lepidopteren der Schweiz," though the author specially remarks of *C. pontificellus*, p. 401, "larva to this hour unknown (in spite of numerous searches by myself and others)."

I hope, with the new lights we now have, the larva of *C. pontificellus* will not remain much longer concealed.—H. T. STANTON, Mountsfield, Lewisham, S.E. : *March 14th, 1885.*

Humble Bees successfully introduced into New Zealand.—The Canterbury (N.Z.) correspondent of the *Anglo-New Zealander and Australian Times*, Mar. 13th, states as follows:—"After several unsuccessful attempts to introduce the Humble Bee, we have at last contrived to land a small number alive. This is owing to the decreased length of the voyage since steamers commenced to run between England and New Zealand. The Humble Bees were brought out in the "Tongariro,"

had not been here many days before they emerged from their dormant condition, when they were at once liberated." No information as to the *sexes* of the *Bombi* that arrived alive is given, but hopes as to the general fertility of red clover in the Colony, resulting from this importation, are expressed, and we trust they may be realized.—EDS.

Anommatus 12-striatus, Müll., and *Adelops Wollastoni*, Jans.—While digging over a piece of garden ground on the 21st of last month, I turned up a decaying potato, and, seeing that it was tenanted by Coleopterous inhabitants, conveyed it into the house for careful examination. The lodgers proved to be three in number, namely, a specimen of *Anommatus 12-striatus*, which I had supposed was invariably found in buried logs, and two examples of *Adelops Wollastoni*. The potato was barely six inches beneath the surface, and it seems rather strange that, after the severe frosts which we have had here, *Anommatus* at any rate should have been found at so slight a depth. A few days later on I took a third specimen of *Adelops*, this time in a rotten parsnip.—THEODORE WOOD, Freeman Lodge, St. Peter's, Kent: *March 11th*, 1885.

Note on Rhizotrogus ochraceus, Knoch (cf. ante p. 221).—I have a Welsh specimen of this species, taken by the late Mr. Weaver, which I obtained from him directly afterwards. In the "Zoologist," xiii, p. 4906 (1855), is a note by the late Mr. E. Newman, announcing that this species had then recently been taken by Mr. Weaver in North Wales in some abundance, flying by daylight. But no allusion is made to the previous capture by Capt. Parry in South Wales of the species recorded in the Trans. Ent. Soc., i, N.S., Proceed., p. 24, as *Amphimalla verna*, Meg.?, and which, according to Mr. Hall, Mr. E. W. Janson has little or no doubt was *Rh. ochraceus*. Assuming this to be correct, the record of Mr. Weaver's captures is of interest, as showing that the habitat extends from North to South Wales; yet the absence of intimation about the particular place where, and the time of year when, the insects were taken is quite in accordance with Weaver's reticence on such matters. Like Mr. Hall, I am not aware of any recent captures, yet it may now be hoped that although the information is not precise, it may be enough to induce residents and tourists in Wales to be on the look-out for these beetles, and to adopt

"the simple plan,
That they must take who have the power,
And they must keep who can;"

that is, keep the captives they may make for those to whom they are desiderata—in other words, all the present generation of collectors of British *Coleoptera*. The distinctive characters of *Rh. ochraceus* were pointed out in Mr. Newman's note, yet it may be useful and sufficient to state here that the species, although generally like the common *Rh. solstitialis* (Midsummer Chafer), is about one-fourth less, and, unlike it, flies by daylight.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: *March 2nd*, 1885.

Note on Hypothenemus eruditus, Westw.—This very peculiar little insect, which occurred some fifty years ago in some numbers in the cover of an old book, is sup-

posed by many Entomologists to be peculiar to Britain, and to have only been found on this one occasion. M. Fauvel, however, in the "Revue d'Entomologie," iii, p. 315, proves the identity of the species with *Stephanoderes (Bostrichus) arecca*, Hornung, from Guinea and Colombia, and also with *S. Boieldieu*, from New Caledonia; he considers, also, that *Bostrichus ruficollis*, Fabr., which is given in the last European catalogue as undoubtedly synonymous with *H. eruditus*, is certainly not identical with it. The European *Stephanoderes Ehlersii*, Eich. (*Homæocryphalus*, Lindemann), according to M. Fauvel, is a veritable *Hypothenemus*, and must therefore be united with *H. eruditus* as a second species of the genus.—W. W. FOWLER, Lincoln: March 10th, 1885.

Boreus hyemalis, Linn., near Killin.—On the 23rd of October last, while searching a moss-covered wall in Glen Lochay, I took five specimens of an insect which at the time I could not identify; they were left in the test tube until the other day, when it occurred to me that I should again examine them, but through having been neglected for such a length of time, they were in a very mouldy condition. The specimens turned out to be three ♂ and two ♀ of the above species, agreeing perfectly with McLachlan's description in his Monograph of the British Neuroptera-Planipennia. I noticed that some of the specimens jumped upwards of an inch. My friend, Mr. W. R. Baxter, who was searching for spiders along the same wall, also called my attention to its saltatorial habits. No doubt I could have taken many more of the insect, had I recognised it at the time, as a number escaped by either jumping, or dropping into the grass at the foot of the wall.

In the January number of the "Scottish Naturalist," Professor Trail records having captured in the beginning of November two ♂ and one ♀ near Aberdeen; this is the only record of its occurrence in Scotland that I am aware of.—JAMES J. KING, 207, Sauchiehall Street, Glasgow: March, 1885.

P.S.—Since writing the above, I have learned that Mr. James Hardy has taken *Boreus hyemalis* in Berwickshire, as far back as 1849.—J. J. K.

Occurrence of Hydroptila longispina, McLach., in Scotland.—I have in my collection specimens of this species from Loch Gailhead, Fortingal, and Loch Awe; at the latter locality the species was taken in fair numbers during July of last year. In examining a long series, I find that the long spine-like processes vary to a considerable extent in the amount of exertion, in some of the specimens approaching *H. femoralis*, but even in these extreme cases the two species could not be well confused.—Id.

Neuroptera-Planipennia in Worcestershire.—The following species have occurred to me here within a ten mile radius. *Panorpa communis*, common; *germanica*, rather common. *Coniopteryx aleyrodiformis*, not common; *tineiformis*, common; *psociformis*, local. *Chrysopa perla*, common; *phyllochroma*, not common; *ventralis*, rather common; *aspersa*, one specimen; *tenella*, one specimen, which was bred in June, from a spruce-fir cone collected on the Christmas day—the larva had, I presume, spun up under one of the bracts; *septempunctata*, very common, especially in gardens; *vulgaris*, not common; *flavifrons*, rather common; *alba*, common; *vittata*, not common; *flava*, not common: light strongly attracts most of these

insects. *Hemerobius nervosus*, one ♂, bred from an old gall of *Cynips Kollari*; *sub-nebulosus*, very common, frequenting gardens, and coming to light; *limbatus*, common; *humuli*, very common, especially in woods; *micans*, not common; *nitidulus*, not common; *pellucidus*, one specimen; *elegans*, not common. *Micromus paganus*, common; *aphidivorus*, five specimens; *variegatus*, rather common. *Sisyra terminalis*, not common; *fuscata*, rather common. *Raphidia xanthostigma*, one specimen. *Sialis fuliginosa*, rather common; *lutaria*, very common.

In *Chrysopa* the upper basal portion of the third cubital cellule is separated off from the rest of the cellule by a partition veinlet, and forms an elongate gemmiform cellule; in two specimens of *C. alba* this gemmiform cellule is reduced to about half its usual size, and ends at or about the insertion of the transverse veinlet above it. In one specimen of *C. phyllochroma* the third cubital cellule is divided nearly in half, thus rather simulating *Nothochrysa*. The reddish line on the side of the face in *C. flavifrons* is very unstable, being sometimes broken up into three elongate spots, at others into dust-like punctures below a small fuscous dot, and in one instance is replaced by a distinctly black roundish spot.—J. E. FLETCHER, Worcester: March, 1885.

ENTOMOLOGICAL SOCIETY OF LONDON.—March 4th, 1885: R. McLACHLAN, Esq., F.R.S., President, in the Chair.

Messrs. R. W. Lloyd, of 32, Grafton Square, W. E. Poole, of 11, Chandos Street, A. Bliss, of Pendennis, Allenby Road, Forest Hill, and R. South, of Abbey Gardens, St. John's Wood, were elected Members.

The President alluded to the news of the decease of three Members since the last Meeting, viz.:—Major Parry, Mr. E. C. Rye, and the Rev. D. J. French.

Mr. Verrall exhibited prints and negatives of micro-photographic representations of the wings, and other parts, of native *Diptera*. He found an exposure of ten minutes by gas-light to answer more certainly, and with less chance of error, than a second or two by sunlight. The plan seemed admirably adapted for truthful reproduction of the neurulation in transparent-winged insects. Mr. Meldola said the photographs could be utilized for scientific purposes by the photo-zincograph, and other analogous processes.

Mr. Billups exhibited *Ceraleptus lividus*, a rare British bug, from Chobham; it had previously only been recorded from Deal and Camber.

The Rev. W. W. Fowler exhibited the unique example of *Cerylon atratulus*, lent to him by Herr Reitter: also specimens of an exotic *Cassida* prepared by a taxidermist at Lincoln, in which the colours were well preserved. Dr. Sharp remarked that the late Mr. Rye used to bring out the colours of *Cassidida* by forcing glycerine under the elytra; he was of opinion that the colour existed in the elytra, and not in the body, and was to a large extent due to the natural moisture, the colours disappearing when the insects became dry. Mr. Fowler exhibited one of R. and J. Beck's opaque disc revolvers for the microscope, which they had mounted for him on a universal hinge, so that change of position in every conceivable direction could be effected without touching the insect when under examination. The President said it was the most perfect arrangement he had yet seen.

Mr. Kirby exhibited a remarkably fine variety of *Spilosoma lubricipeda* recently found alive in the Natural History Museum.

Mr. A. G. Butler communicated remarks on Mr. de Nicéville's ideas regarding seasonal dimorphism in certain butterflies brought before the previous meeting, and criticised the details seriatim, deprecating haste in drawing conclusions on such matters without sufficient experience. Mr. Weir fully agreed as to the necessity for patient experiment; he remarked that although the broods of *Pieris napi* were apparently constantly distinct in England, there was an idea that such was not the case in Ireland. Mr. Meldola also took part in the discussion.

Dr. Sharp called attention to a statement in the *Compte-Rendu* of the Belgian Entomological Society, Meeting of February 7th, 1885, in which the President (M. de Borre) alluded to the discovery of *Helops brevicollis*, Kryn., in Belgium. In the course of anatomical studies on *H. striatus* made at Louvaine it was found that the spermatozoa of certain individuals differed from those of others; examples were submitted to M. Allard, who at once detected *H. brevicollis* amongst what were at first supposed to be all *H. striatus*. The President feared that even in these days of minute investigation for specific characters, attempts to fix characters from the form of the spermatozoa would not often be practicable.

The Rev. W. W. Fowler read a paper on new forms of *Languriidæ*, in which many new generic divisions were established.

The Rev. T. A. Marshall communicated a monograph of the British *Braconidæ*, in which the Family was very critically examined. In remarking on the enormous increase in the number of known British species within a few years, he said it was mainly due to the extent to which he had been aided by British Lepidopterists, who instead of destroying and neglecting the parasites bred, as was formerly the case, now preserved them, and submitted them to specialists for study.

The President read a paper on the species of *Nemopteridæ* from Chili, collected by Mr. J. J. Walker, B.N., exhibited at the Meeting on October 1st, 1884. He proposed to term the insect *Stenotania Walkeri*. General remarks on the Family were included, and a group of small delicate species, represented by *N. filipennis*, Westw., and allies, was considered of generic rank, and the term *Croce* was applied to it.

Obituary.

L. Rudolf Meyer-Dür died at Zürich on March 2nd, aged 73; for nearly two years previously he had been hopelessly paralysed. At the time of his death he was probably the oldest of Swiss entomologists (Perty died last year). For the greater part of his life he resided at Burgdorf. There are, or have been, few Swiss entomologists who have done more to elucidate the insect-fauna of their country, which is probably the most interesting and suggestive, and at the same time the most difficult for investigation, in Europe. His general knowledge was extensive; but his published works and papers more especially concerned *Hemiptera*, *Neuroptera*, and *Orthoptera*, and in all he made his mark. He was one of the founders of the Swiss Entomological Society, and in its "*Mittheilungen*" most of his papers were published. More than 20 years ago he made a voyage to Buenos Ayres for entomological purposes. In 1859 he accompanied the late Edouard Pictet on an important entomological excursion in Spain; he also collected in the south of France. With these exceptions all Meyer-Dür's entomological energies were devoted to Switzerland.

THE *NITIDULIDÆ* OF GREAT BRITAIN.

BY REV. W. W. FOWLER, M.A., F.L.S.

(Continued from p. 219).

2. Colour greenish or greenish-blue, sometimes purple, with strong metallic lustre.

a. Punctuation close, and comparatively weak.

M. æneus, Fabr.—Oblong or oblong-ovate, shining, greenish or greenish-bronze, with rather thick and fine greyish pubescence; antennæ and legs piceous, anterior tibiæ lighter, very finely serrated; punctuation rather close, with fine reticulation between punctures. Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

var. *cæruleus* (*M. cæruleus*, Steph.).—Colour blue or purple, with elytra sometimes brownish; pubescence very scanty. Length, 1 lin.

Very common and generally distributed on different flowers; abundant on *Ranunculaceæ* in spring; the variety is rather rare, and is often regarded as a different species by collectors.

This species is very variable, and often gives rise to mistakes. M. Brisout says concerning it (Synopse du genre *Meligethes*, p. 10), "In the south of Europe, in Algeria, and in Syria it usually occurs with greyer and rather longer pubescence; the posterior angles of the thorax are, as a rule, right angles, but it is not uncommon to meet with examples in Algeria and in Spain which have these angles obtuse or even rounded." These remarks are worth quoting, as showing the difficulties that the genus presents, even in its leading characters, and as tending to prove that probably several of the generally received species may be with reason considered varieties or races of some other species.

The life history of this species, with figures of eggs, larvæ, &c., is given by Miss Ormerod in Vol. XI of this Magazine, pp. 46—52.

b. Punctuation more diffuse, and rather strong.

M. viridescens, Fabr.—Rather long, oval, shining, greenish-blue, sometimes entirely green, rarely blackish; legs red; antennæ red, with club darker; anterior tibiæ very finely serrated; punctuation rather strong, with fine reticulation between punctures, plainer on thorax than on elytra. Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

Very common and generally distributed; usually found in company with the preceding, from which its rather longer and more oval shape, lighter legs, and stronger punctuation at once distinguish it.

- ii. Anterior tibiæ very finely toothed from a little below base to beyond middle, with two or more conspicuously stronger teeth at or close to apex.

1. Upper surface without cross striation or reticulation between punctures.

A. Very shining, black, or with dark brown reflection; punctuation strong, especially on elytra.

a. Anterior margin of forehead emarginate.

α. Body long-oval; punctuation of elytra plainly stronger than that of thorax.

M. difficilis, Heer.—Deep black, shining, usually with a greenish reflection, of rather long-oval shape; antennæ reddish-brown, with first two joints lighter; anterior legs yellow or reddish-yellow, posterior pairs slightly darker, with outside margins of tibiæ usually dark brown, rounded; anterior tibiæ furnished at apex with three or four rather conspicuous sharp teeth; male with metasternum strongly depressed, with a tubercular prominence on each side of the depression about the middle; the female presents the same characters to a less degree.

Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

Local, but by no means uncommon on *Labiata*, especially *Lamium album* and *Stachys sylvatica*. Manchester, Eastry and Bearsted (Kent), Amberley, Caterham, Esher, Horsell, Thames Ditton, Lincoln, Repton; Putney, on *Symphytum officinale*, Mr. Newbery.

M. Brisout (*l. c.*, p. 30) says that he possesses a male from Naples, which differs from the type in having the last segment of the abdomen thickened into a transverse smooth tubercle; this is interesting, as showing that the male characters may not always be quite constant.

var. *Kunzei*, Er.—Very like the type, but larger, with the anterior tibiæ less strongly toothed, the punctuation of the elytra more diffuse, and the first three joints of the antennæ lighter red, instead of two only: the colour is black, and never shows a trace of the greenish reflection which is so noticeable in *M. difficilis*; the pubescence, which is very scanty, is whitish instead of blackish, as in the type.

Length, 1 $\frac{1}{4}$ lin.

Rare; on *Lamium album*, *Stachys sylvatica*, *Agraphis nutans*, and *Melampyrum pratense*; according to M. Brisout it also occurs on *Mercurialis perennis*. Horsell, Eastry, Amberley, Mickleham, Caterham, Reigate, Llangollen, Repton.

Erichson, although with some doubt, considered this insect a separate species; Reitter and many others, however, hold it as a variety. Brisout makes it a good species, because of the male characters, the metasternum of the male being without the two tubercles, which are conspicuous in *M. difficilis*.

β. Body short-oval; punctuation of elytra not much stronger than that of thorax.

M. morosus, Er.—A very difficult species, concerning which there seems to be considerable doubt; it comes very close to *M. memnonius*, from which it is distinguished by having the anterior margin of the forehead emarginate, and the punctuation not quite so strong, and also by having the first and second joints of the antennæ reddish instead of the second only: this character, however, can by no means be depended upon, as is plain from Mr. G. R. Waterhouse's notes (*Ent. Ann.*, 1874, 61), taken at the time he examined Erichson's collection at Berlin, "*Morosus* and *memnonius*

very much alike, and difficult to distinguish; *morosus*, however, has rather a shorter form, and the antennæ are pale throughout, whilst in *memnonius* they are dusky at base and apex." As regards the emargination of the forehead, Reitter himself says it is slight in this species, and as *M. memnonius* has the anterior margin not always quite straight, a confusion might easily arise; if they are distinct species, they are certainly very closely related. Brisout does not recognise *M. memnonius* at all, while Reitter places them in different divisions altogether. Length, 1 lin.

I have a specimen from Repton, and there are several in the late Mr. Rye's and Dr. Power's collections which appear to belong to this species, but it would seem advisable to include them under *memnonius*, or, *vice versâ*, to include our *memnonius* under *morosus*.

b. Anterior margin of forehead straight.

γ. Body short oval; colour shining black.

αα. Punctuation not much stronger on elytra than on thorax.

M. memnonius, Er.—Very like the preceding species, and in all probability not distinct from it; the second joint of the antennæ only is reddish, and the punctuation, according to Erichson, is more diffuse than in *M. morosus*; it also resembles *M. ochropus*, from which it may be distinguished by its closer punctuation, smaller size, and darker antennæ and legs; from *M. difficilis*, to smaller specimens of which it comes rather close, it may be separated by its closer punctuation and general shape.

Length, $\frac{3}{8}$ — $1\frac{1}{4}$ lin.

On *Caltha palustris*, also on *Labiata*; Worthing, Repton, Bearstead; London District, common; on flowers of *Galeopsis unicolor*. Chat Moss, Mr. Chappell; a widely distributed and not uncommon species.

Since writing the above, I have received from Herr Reitter a type labelled *M. niger*, Bris., *M. memnonius*, Reitter, non Erich., and in his letter he says, "I do not know *memnonius*; the species which I have described is *niger*, Brisout." *M. niger* is very different from *M. memnonius*, Er., being more closely, though strongly, punctured, less shining, more pubescent, and with evidently longer thorax, which is about one-third broader than long; the species described under *M. memnonius* in Herr Reitter's Monograph is the *M. memnonius* of Erichson, as we understand it, for he mentions the fact that it comes near to *M. ochropus*, and has the thorax almost double as broad as long; the whole matter has yet to be cleared up, but the explanation seems to be that *M. memnonius*, Er., and *M. morosus*, Er., are not really distinct, and that *M. memnonius*, as it stands in some of the foreign collections, is really *M. niger*, Brisout, which name M. Brisout has altered to *M. parvulus*, as Newman described a species previously as *M. niger*.

bb. Punctuation much stronger on elytra than on thorax.

M. ochropus, Sturm.—Broad and short oval, convex, strongly and diffusely punctured; antennæ of a light reddish colour, first two joints yellow; legs as a rule yellow, occasionally darker; punctuation of elytra very diffuse and strong; male with a smooth shining tubercle on the last abdominal segment; anterior tibiæ with three or four sharp teeth at apex, which are not so strongly developed as in *M. difficilis*; the chief character of this species lies in the outer margin of the posterior tibiæ, which is not rounded, but dilated in almost a straight line until the lower third, where it is suddenly and obliquely contracted (*vide* Ent. Ann., 1873, 28).

Length, $\frac{3}{4}$ —1 lin.

Rare; on *Labiata*; New Forest; Claygate Lane (Esher); Rusper, near Horsham, and Eastry, on *Stachys sylvatica*, Mr. Gorham; Caterham, Mr. Champion. This species was first recorded as British by Mr. Bold (Ent. Mo. Mag., iii, 47), but his specimen was *M. brunnicornis*; Mr. Crotch's *ochropus* was also *M. brunnicornis*, according to Mr. Rye; M. Brisout named it *morosus* (Ent. Mo. Mag., vi, 282).

8. Body long oval; shining, with dark brown reflection.

M. brunnicornis, Sturm.—About the size and shape of *M. difficilis*, but distinguished by its rather closer punctuation, lighter antennæ and legs, and the brown reflection of both thorax and elytra, the former of which has usually light margins; the anterior margin of the forehead is, for all practical purposes, straight, and is a very useful character by which to separate dark specimens of this species from immature *M. difficilis*, which has it evidently emarginate; it also resembles *M. ochropus*, but is narrower, flatter, and more finely punctured than that species, besides being differently coloured; the plain grey pubescence, also, which is especially noticeable in fresh specimens, is a good distinguishing character; the male has a small shining tubercle at the extremity of the last segment of the abdomen, which is wanting in *M. difficilis*.

Length, $\frac{3}{4}$ —1 $\frac{1}{4}$ lin.

On *Labiata*, especially *Lamium album* and *Stachys sylvatica*; widely distributed; Dover, Eastry, Rusper, Mickleham, Lee, Claygate, Leith Hill, Caterham, Highgate, New Forest, &c.

B. Moderately shining, black; punctuation close and fine, almost the same on elytra as on thorax.

M. viduatus, Sturm.—Rather broad oval, with close punctuation, which gives the insect a rather dull appearance as compared with species belonging to the preceding division; pubescence blackish; antennæ dark brown, with the first two joints red; hinder pairs of legs dark brown, with the tibiæ somewhat obliquely cut off towards apex, front legs lighter; anterior tibiæ with two or three conspicuously stronger teeth at apex; thorax somewhat narrowed in front, with the side border slightly raised. Male with the last abdominal segment simple.

Length, 1—1 $\frac{1}{4}$ line.

On *Labiata*, especially *Salvia pratensis*, *Galeopsis tetrahit*, and

Mentha aquatica, according to M. Brisout; local, and considered rare; Caterham, Wicken Fen, Mablethorpe; on *Galeopsis tetrahit* var. *versicolor*, Chat Moss, Mr. Chappell; it occurs commonly in Langworth Wood, near Lincoln, on *Ajuga reptans*, and by general sweeping, and also on strawberry flowers in my garden.

M. pedicularius, Sturm.—Very like the preceding, but less convex, of somewhat larger and blunter form, with finer punctuation; the thorax has somewhat more parallel sides, and the side border is very slightly raised; the hinder pair of legs have the tibiæ rounded on the outside, and not obliquely cut off as in *M. viduatus*, and the larger teeth at the apex of the anterior tibiæ are weaker. The male has a large smooth tubercle at the extremity of the last abdominal segment, behind which there is an inclined, smooth, shining space. Length, 1—1½ lin.

Local; said to be not so common as the preceding. On *Labiata*, especially *Lamium album* and *Salvia pratensis*; Caterham, Mickleham, Darent, Wicken Fen, New Forest; it occurs to me commonly on the same plants and in the same localities in and near Lincoln as *M. viduatus*.

These two species are perhaps the most puzzling of the whole genus; the differences given by Erichson, Sturm, Reitter and Brisout are mostly mentioned in the above descriptions, but they are by no means satisfactory, for, as a matter of fact, they are very slight in themselves, and individual specimens of the species appear to differ *inter se* as regards punctuation, denticulation of anterior tibiæ, shape, &c.; the only distinction that really holds good lies in the characters of the male, the tubercle on the last abdominal segment being very plain in *M. pedicularius*, and wanting in *M. viduatus*; M. Brisout has kindly written to me on the subject, and says that *M. viduatus* is quite distinct by the finer punctuation and the absence of this tubercle, the latter character being always constant; he has also named specimens for me taken together under precisely the same circumstances near Lincoln, part of these being the one species and part the other. When, however, species so very closely related are found mixed together in this way, it is rather a temptation to consider them as races of one species, especially as the male character in some species is not always quite constant; in a long series of the two species the punctuation appears to vary from being nearly as coarse as in *M. memnonius* to very fine, with intermediate grades. I find the males of *M. pedicularius* rather rare, and cannot separate the females of the two species satisfactorily, owing to the occurrence of these intermediate forms as regards punctuation.

EXCHANGE.

Duplicates: 700 species of British Coleoptera. Lists arranged—A. E. HUNSON, Llandilio Crisseany, Aberystwyth.

Exotic Lepidoptera—Duplicates: Orn. Brachiaea, argus (fair), minus 2 (fine), Richmondia (fine), Garsia (fair); Papilio Hector, polymnestor, philoxenus (fine), proteus rhetenor (fine), Jussu, distans, Paris, polytus, chion (fine); Minetra gaudens (fine); Diadem dinarcha, Hew. (fine), nathana; Lilius, procris (fine); Ammeria niavina; Cethosia cyana; Cat. cynastra, assala (fine); Smyrna Bionidid (fine); Morpha amathousa (fair), Sulikowsky (fine); Urania rhyphens (fine); Atthis Atlas, bred; also many others. Duplicates: Exotic Rhopalocera, particularly rare Papilio, for breeding; condition immaterial.—J. J. HUNSON, Railway Terrace, Crisse Lane, near Manchester.

ERRATUM.

Page 221, line 20 from bottom, for "Stephens," read "Stevens."

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VOL. XXI.

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the British Isles, and the progress of the natural sciences.

Since writing the above I have heard from Herr Reitter, who says, "*M. pedicularius* and *viduatus* are hardly different." I am glad to have my opinion borne out by so high an authority, although there is certainly cause for a difference of opinion on the subject.

2. Upper surface with cross striation or reticulation between punctures ; black, as a rule rather dull.

- A. Cross striation on elytra only ; anterior tibiæ with two stronger teeth at apex, not separated by smaller teeth.

M. bidens, Bris.—Rather like *M. pedicularius*, but smaller ; narrower than that species, less convex, less shining, and more finely punctured ; antennæ brownish, with the first two joints red ; legs dark brown, with the anterior tibiæ ferruginous ; elytra with weak cross striation, which is more evident at the base ; thorax nearly double as broad as long, with the sides nearly parallel. This species is very easily distinguished by the two conspicuous teeth at the extreme apex of the anterior tibiæ, which are widened towards apex. The male has the anterior tarsi rather strongly dilated, and the metasternum with a rather wide and deep impression.

Length, $\frac{3}{4}$ —1 lin.

Local ; Mickleham, on *Teucrium scorodonia* ; Littlington, Birch Wood, Bearstead, Caterham, Chatham, Amberley ; *Scabiosa succisa*, Kingsdown, Mr. Newbery ; it occurs near Paris on *Trifolium medium*, according to M. Brisout.

- B. Cross striation or reticulation on the whole of the upper side.

- a. Thorax at base wider than elytra ; anterior tibiæ with two to five stronger teeth at apex, of which two or three are usually larger than the rest ; none, however, are very conspicuous, and they are very often almost obsolete.

M. umbrosus, Sturm.—One of our largest species, in size equalling average specimens of *M. lumbaris* ; short and broad, convex, with very thick and fine punctuation, which gives it a dull appearance ; pubescence close, usually grey, sometimes blackish : anterior tibiæ with several more prominent teeth towards apex ; these, however, are not conspicuous, as in some of the allied species, and sometimes are very weak and almost obliterated. The male has a small prominence on the metasternum between the posterior coxæ, and a little transverse keel at the extremity of the last abdominal segment ; this character, however, is very variable in different specimens ; it also has the anterior tarsi strongly dilated. Length, $1\frac{1}{4}$ —1½ lin.

Not common ; on *Genistæ*, wild *Cistus*, and *Helianthemum vulgare* ; London district, very local, Dr. Power ; Rusper, Bearsted, Darenth, Seven Oaks, Caterham, Chatham, New Forest, Shiere, &c.

(*M. maurus*, Sturm, which is wrongly considered a British species—all its supposed exponents being *M. ovatus*, Sturm—comes very close to *M. umbrosus*, in fact it is very hard to distinguish them, as in punctuation, armature of anterior tibiæ, &c., they are exceedingly alike ; *M. maurus*, however, is rather larger than *M. um-*

bronus, with very slightly stronger punctuation and weaker pubescence, and with the posterior margin of the thorax not broader than the base of elytra; the thorax is narrower, with its sides more parallel; the teeth of the anterior tibiæ are rather stronger; the metasternum is impressed, and has two small tubercles on the front edge of the impression, and the last segment of the abdomen is furnished with a small smooth tubercle. Length, $1\frac{1}{4}$ lin.

Common in France on *Salvia* and *Mentha*.)

♂. Thorax at base at most as wide as elytra; anterior tibiæ with three or four conspicuously larger teeth at apex, the last but one being usually the largest.

♀. Punctuation closer and weaker; upper surface dull.

M. incanus, Sturm.—About the size of *M. umbrosus*, of exactly oval outline (the shape is well figured by Sturm, Deutschlands Insecten., xvi, plate cccix, F), thickly and very finely punctured, with fine cross striation between punctures, and clothed with fine greyish-brown pubescence; antennæ black or brownish, with the first two joints lighter; anterior tibiæ dilated towards apex, with three or four rather strong irregular teeth near apex, of which the last but one is usually the most prominent. Length, $1\frac{1}{4}$ lin.

This species comes near *M. ovatus*, but is more closely punctured, and comparatively dull; a single specimen only is known as British, which was taken by Mr. G. R. Waterhouse, in Darenth Wood, in July, 1859, on *Echium vulgare*: this specimen Mr. C. O. Waterhouse has kindly sent me for examination; it is a small example of the species, but otherwise agrees exactly with the description of *M. incanus*, and with a type sent me by Herr Reitter; it is quite distinct from all our other species. M. Brisout has taken this insect on *Solanum dulcamara* and *Nepeta cataria*.

♂. Punctuation stronger; upper surface shining.

M. ovatus, Sturm.—Black, shining, oval, convex; something like *M. riduatus*, but more ovate, with the thorax more narrowed behind; antennæ black, with the first three joints red; punctuation much stronger than in either of the three preceding species; anterior tibiæ strongly dilated with three or four large teeth at apex, which are very variable. Male with a strong tubercle at the extremity of the last segment of the abdomen, and with the anterior tarsi conspicuously dilated. According to M. Brisout, this species may easily be distinguished from its allies by the form of the extremity of the elytra, the posterior margin of each being slightly sinuate, with the sutural angle a little prolonged and rounded.

On *Labiata*; not uncommon, but local; Ditchingham, Mickleham, Esher, West Wickham, Horsell, Nettlecomb (Somerset), Lee (North Devon); Chat Moss, flowers of *Galeopsis*; Eastry, Seven Oaks, Caterham, Cobham (Kent), Chatham, St. Mary Cray.

iii. Anterior tibiae without conspicuously stronger teeth at apex; as a rule, evenly and finely, although distinctly, toothed for the greater part of their length, but often presenting irregularities, particularly as regards breadth of teeth.

A. Thorax entirely smooth between punctures; elytra with interstices smooth, or at most showing very faint traces of cross striation; forehead with anterior margin straight.

a. Anterior tarsi of male strongly dilated; thorax only a quarter broader than long, at least as broad as elytra.

M. flavipes, Sturm.—This insect is associated by Sturm with *M. pedicularius* and *M. ovatus*, but is very different from either; Reitter compares it as regards contour with *M. coracinus*, but it is less ovate than that insect; it is black, rather shining, more or less oblong, somewhat thickly and finely punctured, with grey pubescence; antennae yellow or yellow-red, legs brownish-yellow, anterior pair lighter; anterior tibiae armed with fine teeth, becoming gradually larger towards apex, rather variable in different specimens; in fact, these teeth are so much stronger in some specimens, that this species might perhaps with more reason be referred to the preceding groups; on the whole, however, it is best placed here; the anterior tarsi of the male are strongly dilated. Length, $\frac{3}{4}$ —1 lin.

On *Ballota nigra*, *Melilotum*, and *Cirsium lanceolatum*; local, but not uncommon; Shiere, Horsell, Darenth; on broom near Lancaster; on *Umbelliferae* generally, Kent; Hammersmith, Deal, Whitstable, Eastbourne, &c.

b. Anterior tarsi of male not or very slightly dilated; thorax twice as broad as long, narrower than the base of the elytra.

M. picipes, Sturm.—Short oval, rather convex, black, with a leaden reflection, clothed with thick grey pubescence, rather deeply and thickly punctured; antennae yellow-brown, with the first joints lighter; legs reddish, the anterior pair lighter; anterior tibiae finely but rather unevenly and irregularly toothed, the teeth being in some specimens fine and sharp, in others broader and blunter, the right and left tibiae being occasionally different, and showing both these characteristics in the same insect; both sexes have a small excavation at the extremity of the last abdominal segment. Length, $\frac{3}{4}$ —1 lin.

Common and generally distributed; abundant on all kinds of flowers and blossom; apparently one of the first beetles to appear in the year, and the last to disappear.

(To be continued.)

Additions to the Trichoptera of the Worcester district.—Notwithstanding the little collecting I did last year, I, almost accidentally, added two species to my local list of *Trichoptera*, viz., *Ecetis testacea* and *E. notata*—one ♂ of each, the former on the Teme, the latter on the Severn. The number of local species now stands at 73.—J. E. FLETCHER, Worcester: March 9th, 1885.

DESCRIPTIONS OF SOME NEW SPECIES OF *LEPIDOPTERA*
FROM ALGERIA.

BY GEORGE T. BAKER.

(Concluded from page 245.)

EURYCREON PECHI, n. sp.

Alæ anticae brunneo-olivaceae; strigis tribus albidis sed non ad costam attinentibus, cum striga centrali acute angulata, et cum striga postica dentata; strigis duabus albidis ante marginem posticum. Alæ posticae argenteo-cinereae, striga olivaceo-cinerea ante marginem. Cilia albida olivaceo tessellata.

The anterior-wings are greyish olive-brown. A short white line runs from the base of the wing into an interrupted oblique transverse line very near the base, which (transverse line) extends from the inner margin nearly up to the costa. Just in front of the middle of the wing a very acutely angulated, well-defined, white stripe runs nearly parallel with the first line, and also stops in front of the anterior margin, near which the angulation occurs, this stripe is even more oblique than its predecessor. The white sub-marginal curved line is frequently toothed, and in one specimen rather interrupted; this again does not extend up to the costa, and converges towards the base, as do the other two lines. Directly beneath the apex is a white spot, which is the source of a very fine white line extending to the inner margin. The dark hind margin is bordered interiorly by a white stripe, the anal angle half of which re-ascends, forming a short double line.

The fringes are grey, with a divisional line, finely intersected with white.

The posterior-wings are grey, with the veins darkly dusted, and a broad darker margin, which has a pale line on its inner edge, and is slightly spotted on its outer edge.

The hind-margin is bordered by a fine dark line. The fringes are whitish, with a dark dividing line, finely intersected with white.

Thorax white, with scapulae and central line same colour as the fore-wings, collar and antennae also same colour as fore-wings. Abdomen silvery-grey.

I have 2 ♂ specimens of this fine *Eurycreon*, which was taken rather rarely at Lambessa in April. Measurement, 30—31 mm.

CONCHYLIS UNICOLOR, n. sp.

Alæ anticae pallidae flavo-ochraceae unicolores. Alæ posticae cinereae.

Anterior-wings pale straw colour, without any markings, and with fringes of the same hue. Hind-wings grey with paler fringes, which have a dark dividing line. Head and antennae straw colour. Abdomen dark grey, with the anal extremity of a golden hue.

On the under-side, the anterior-wings are dark lustrous brownish-grey, and the posterior-wings are rather paler than the upper-side.

Under a good lens, the basal half of the costa is seen to be minutely and darkly dotted.

Only one specimen of this insect was taken at Lambessa in April, which measures 16½ mm., and is in my cabinet.

TINEA MAURITANICA, n. sp.

Ala antica ferruginea nitida unicolora. Ala postica fusco-cinerea. Corpus sat robustum, caput ferrugineum.

The anterior-wings are uniform ochreous rust colour, without any markings, and slightly lustrous, with fringes of the same hue. The hind-wings are dark grey with rather paler fringes.

Head and thorax same colour as anterior-wings; abdomen as posterior-wings. The under-side of both anterior- and posterior-wings is dark lustrous brown.

In one specimen the colour is much darker than in the other, the fore-wings being almost of a dark brownish-red hue, with browner posterior-wings.

This species, which comes very near to *chrysoptarella*, was taken rarely at Guelma in June, and measures from 12 to nearly 14 mm. Two ♂ are now in my collection.

There should be no difficulty in separating this species from *chrysoptarella*, as its colour is uniform dull red, while the latter is of an almost orange hue, some specimens being of a bright orange. It is also a smaller insect than *chrysoptarella*, and the fringes of all the wings are much shorter. Yet, it is just possible, it may be only a dark form of *chrysoptarella*.

PLEUROT A OCHREOSTRIGELLA, n. sp.

Ala antica aureo-ochracea, vitta fusca prope costam obscuriore. Ala postica fusco-cinerea. Palpi capite et thorace longiores.

Anterior-wings uniform pale golden-ochre, with the longitudinal stripe near the costa of a darker brown, and fairly distinct. The fringes are also of an ochre colour. The apex is very acuminate, almost sinuate. Posterior-wings dark grey with paler fringes.

Head and thorax pale ochre colour. Palpi ochre coloured, irrorated beneath and outside with black, the end joint being very nearly as long as the head, and their total length being rather longer than the head and thorax. Abdomen darkish grey.

The ♀ is rather paler in colour, with a more distinct stripe, and much lighter hind-wings. ♂ measures 21 mm.; ♀, 23 mm.

This species, which will precede *metricella*, was taken at Guelma in June; a ♂ and ♀ being in my collection.

From *metricella* it may be distinguished by its deeper and more golden colour, the former insect being much paler, and with a very slight bronzy hue. In *metricella* also the costa is much paler than the rest of the wing, which is not the case with our species. The palpi are also decidedly longer in the present insect than in *metricella*.

PLEUROT A ALGERIELLA, n. sp.

Ala antica flavo-ochracea, vittis duabus, costali et centrali, argenteo-albidis, vitta media dentata, cum margine interiore pallidiore. Ala postica cinerea. Palpi, capite et thorace longiores.

The colour of the anterior-wings varies from chestnut-brown to very pale yellowish-ochre, the inner margin being always paler than the rest of the wing. The longitudinal costal and central stripes are silvery-white, the latter being very broad up to beyond the middle, where it is toothed, and is continued right up to hind margin. The fringes are rather lighter than the ground colour.

The posterior-wings in the darker specimens are darkish grey, but are quite pale in the lighter one.

Head whitish, thorax pale yellow. Palpi white, thickly dusted with dark brown beneath and outside, end joint as long as the head, total length rather longer than the head and thorax. Abdomen in fresh specimens silvery. Apex of anterior-wings very acuminate.

This fine *Pleurota*, which will precede *aristella*, was taken at Guelma in June; 1 ♂, measuring $25\frac{1}{2}$ mm., and 2 ♀, measuring 24 mm., being in my collection.

From *Schlægeriella*, which it follows, it may be distinguished by its larger size, its yellower and generally much paler colour, its broader and silvery-white costal stripe, and by its very broad, silvery-white, and distinctly toothed median stripe. The head and palpi, which in *Schlægeriella* are grey, the latter being densely irrorated with black, are in the present species white, with the dustings of the palpi much less dense. The thorax and abdomen are whitish in the present insect, but are brown in *Schlægeriella*.

From *aristella* it may be at once recognised by its much larger size, being nearly half as large again. It is also of a yellower and paler colour, the median stripe is also broader and toothed, and the head and palpi are whiter in *algeriella* than in *aristella*.

From *macrosella*, which it most nearly approaches in size and general appearance, our species may be recognised by its colour being brighter and redder, also by its costal stripe being silvery, whereas in *macrosella* the costal stripe is very pale ochre colour, and quite lustreless.

In *algeriella* the central stripe is very broad and silvery up to rather beyond the middle, where it is distinctly toothed, and from whence it becomes narrower up to the hind margin, whilst in *macrosella* this stripe is of almost uniform width, and much less silvery. The palpi, head, and thorax are white in *algeriella*, but pale ochre in *macrosella*.

Also in *macrosella*, the females have the anterior-wings almost falcate, but in our present species this important feature is wanting.

The Bracken, Augustus Road,

Edgbaston: April 7th, 1885.

INSECTS IN ARCTIC REGIONS.

[EXTRACTED FROM "DAS INSEKTENLEBEN IN ARKTISCHEN LÄNDERN, VON CHRISTOPHER AURIVILLIUS,"

FORMING PART OF NORDENSKIÖLD'S "STUDIEN UND FORSCHUNGEN VERANLASST DURCH MEINE REISEN IM HOHEN NORDEN:" LEIPZIG, 1885.]

A special interest attaches to the question of the mode of life in insects in relation to their surroundings in high Northern latitudes. Knowing, as we do, that the time available for the development of an insect in the extreme North is limited to from 4 to 6 weeks in the year, one has felt surprised how it could be possible for certain species to run through all their transformations in so short a time.

R. McLachlan, in his paper on the insects of Grinnell Land (Journ. Linn. Soc., Zoology, vol. xiv), refers to the difficulties which the shortness of the summer interposes to the development of insects, and intimates his suspicion that a development which would with us take place in a single summer would there require several summers.

The correctness of this suspicion has been completely established by the interesting observations on species of *Lepidoptera* in South Waranger, in latitude 69° 40', made by G. Sandberg. He was successful in watching the development of some extreme Northern species from the egg.

Let us take as an example *Eneis Bore*, Schn., a true hyperborean butterfly, which has never been found outside the Arctic circle, and even there only occurs in places which bear a truly Arctic stamp.

The imago flies from the middle of June onwards, and lays its eggs on various species of grass. The eggs are hatched the same summer; the larva hibernates below the surface of the earth, feeds and grows all through the following summer, but does not succeed in attaining its full size; it then hibernates a second time, and does not assume the pupa state till the spring of the following year.

The pupa, which in the allied forms in more southern localities is freely suspended in the air to a grass-stem or some similar object, here reposes in the earth, which in so inclement a climate must evidently be a great advantage.

The butterfly escapes from the pupa-skin after an interval of from 5—6 weeks, a period of unusual length for a diurnal *Lepidopteron*. In more southern lands the pupal repose of butterflies in summer rarely exceeds a fortnight. Hence, the entire metamorphosis is more tedious than in more temperate regions.

By these and other observations, Sandberg shows that one Arctic

summer, in latitude 70° , does not suffice for the development of many *Lepidoptera*, but that two or more summers are required for the purpose.

If, therefore, more than one summer is needful for the development of *Lepidoptera*, it appears to me even more certain that Humble-bees must require more than one summer. With us it is only the fully developed females which survive from one year to the next; in spring they form the new nest, lay eggs, and bring up the larvæ which develop into workers, and thus begin to contribute to the support of the family, whence at last towards autumn males and females are developed. It seems hardly credible that all this can happen each summer in a similar way at Grinnell Land, in latitude 82° , especially as there the supply of food must be less than with us. Hence, the development of a colony of Humble-bees must there be something quite different.

Were it not satisfactorily established that Humble-bees do occur in such high latitudes, one might, from our knowledge of their mode of life, be disposed to maintain that under such conditions they could not live.

They seem, however, to have one advantage over their more Southern brethren. In the Arctic regions they do not seem to be troubled with parasites, such as *Conops*, *Mutilla*, which help to diminish their numbers in other countries.

Entomology and Medical Jurisprudence.—Our correspondent, M. Lichtenstein, sends us a paper under the title "Un nouveau cas d'application de l'Entomologie à la Médecine légale," extracted from the "Montpellier Médical" for February, 1885, from which we make the following notes:—

When pulling down an old house at Montpellier, the workmen discovered the mummified remains of a new-born infant concealed under the flooring. An enquiry was held on the remains, which (owing to their condition) mainly resolved itself into a question as to how long a period had elapsed since they were deposited. As insect remains were present, M. Lichtenstein was asked to report as an "expert." He found in the linen in which the body was wrapped numerous empty pupæ of *Diptera*, numerous "runs" of Lepidopterous larvæ, which he considered the work of *Aglossa pinguinalis*, and remains of *Anthrenus*. On the body itself were débris of *Ptinus* and the cast skins of *Acari*. But nothing whatever in a living state. In taking into consideration the nature of the insect remains (*Ptinus*, *Anthrenus*, and *Aglossa*, in which latter case reference is made to the late Mr. Buckler's paper in the No. of this Magazine for February, 1884), M. Lichtenstein arrived at the conclusions that four or more years must have elapsed since the body was deposited where it was found, and (from the Dipterous pupæ) that it must have previously been exposed to the air for some time.—Eds.

Notes on Lepidoptera.—The following notes refer to some very common species of *Lepidoptera*, but touch on certain points in their development, which seemed to me worth recording.

Dichonia (Agriopis) aprilina.—The egg is laid in the autumn, but I cannot describe its appearance at first; early in February I described it as follows: egg of the usual *Noctua* shape, but flattened, being about .85 mm. in transverse measurement, and only .5 mm. vertically: it has fourteen or fifteen rather blunt ribs, which extend from the waist to the apex, and which appear somewhat bossed by the crossing of the transverse reticulation; the colouring is very pretty, the ribs being white, and the intermediate spaces black, as is also the central spot on the top; this arrangement makes one think of the licheny look both of the full-grown larva, and also of the imago.

The newly-hatched larva which, with me, appeared during the last week in March, is rather over 2 mm. in length, stoutish, with large jet-black shining head, collar also shining black, the body smooth, in colour dingy drab, with a paler spiracular line, the usual dots inconspicuous, each having a short dark bristle. On supplying my larvæ with unopened oak-buds, I found they soon bored their way into them, eating out the interior, and lodging in the chamber thus made; they presently grew fat, and looked like comfortable *Tortrix* larvæ.

By the middle of April they had moulted, but had not changed their dress very much; a larva of the length of 7 mm. I described as follows: head, collar, and anal plate black; the skin very glossy, in colour pale brown, with an indistinct paler mottling; the usual dots paler, and very small; the spiracles black.

At the end of April, however, another moult produced a decided change; the length now 9 mm., the head black, the body whitish, with a pattern of eight broad dorsal diamonds in black freckles, darkest on the sides, with some dull orange freckles mixed; the dorsal line white, but broken into short streaks; the usual spots small and black; the spiracles black; the larva now appears to feed without concealment on the opening buds; and from this time the adult pattern and colouring become more developed.

As I noticed above, it is interesting to observe that there are three periods in the life-history of this species, at which it exhibits mimicry of lichens, the egg (at least, some time after deposition), the maturing larva, and the imago; while it is not less interesting to mark the great change in habit and appearance exhibited by the growing larva.

Dryobota (Hadena) protea.—Egg laid in autumn, described in month of February; of depressed *Noctua* form, .65 mm. in transverse measurement, and .45 mm. vertically; there are sixteen ribs, of which eight are stout, and come to the central button on the top, and the other eight stop short in the intermediate spaces; the transverse reticulation shallow and fine, and knobbing the ribs in its passage; the ground-colour of the shell is dull brown, on which the glistening white ribs show out distinctly, giving a very pretty effect.

The newly-hatched larva (March 15th, 1884), is about 1.5 mm. in length, with large black shining head, from which the body tapers to the tail, the colour a faint violet-tinged grey all over, the usual dots inconspicuous; the larva makes its way into an oak-bud, and lives and feeds within: in three weeks' time the colour has become brownish, the head and collar still black, the figure slender; after a moult:

(? second), when the length is about 6 mm., the head and collar still black, the general colour paler brown than before, with paler indistinct dorsal and sub-dorsal lines, the dots small and black; the larva still living inside oak-buds: afterwards the ground-colour becomes darker brown, the head still black, the dorsal and sub-dorsal lines narrow, and yellow in colour, the spiracular line broader, and of paler yellow, the dots black, the spiracles ringed with black: in May, when the oak-buds are now opening, the larva makes a cave for itself by spinning together the small leaves with a good deal of silk, the length now 16 mm., the head dull brown, contrasting with the greenish second segment, and the collar edged in front with yellow, the general colour of the body ochreous, showing warmer at the folds, mottled with dull greenish, the dorsal line primrose, the sub-dorsal and spiracular threads both yellow; spiracles green, ringed with black, the dots still black. With the last moult the larva becomes all over green, freckled with yellow, the dorsal line of primrose remains distinct, the sub-dorsal thread is gone, the dots also not to be seen, though the place of each is marked by a very small fine hair: the larva now feeds openly, and ceases to make any shelter for itself by drawing together the oak-leaves.

Diloba caruleocephala.—The egg laid in autumn, large for size of the moth, of depressed *Noctua* form, about .85 mm. transversely, and .5 mm. vertically, the whole shell rugose, with fifteen or sixteen coarse ribs, in centre of top a small circular space thimble-pitted; the shell sparsely set with some long (.65 mm.), curled and tangled flat hairs, broad (more than 0.5 mm.) at their bases and tapering upwards; in colour the upper part of the shell dark bronzy-brown, the under-part pale leaden-grey, the hairs white.

The young larva (hatched in beginning of March) not quite 3 mm. in length, the head shining jet-black, the collar large and black, the ground-colour dull greenish, the usual spots prominent, and shining black, each emitting a long, rather waved, black bristle, but also set with a number of tiny short black bristles, as, indeed, is the whole skin, and the number of these bristles makes the little larva look black; but in three or four days' time, when it has grown, the bristles stand more apart, and the ground colour is less hidden, and there appear on the back and sides large pale yellow spots, so that before its first moult the larva has assumed very much of the appearance which it wears when full-grown, in this showing a very different habit from that of the two species described above.

Agrotis (Triphana) pronuba.—Few years pass without my having the eggs of this species before me, either through a find of my own, or else through some one sending me a batch to name; the moth, of course, has an extended flight, and it is not at all particular as to the nidus to which it entrusts its eggs; a tall grass stem in the middle of a meadow, a reed blade by the water, an elm-leaf five feet from the ground, a bay-leaf close to the ground, a dry stick lying on the ground—these are a few of the positions I have known chosen, and they, to some extent, account for the puzzle as to the species to which the eggs should be credited; but, subject to the variation necessarily caused by the difference of position, the plan of their deposition is always the same; they are laid in large numbers, amounting to many hundreds (in one instance I counted twelve hundred), evenly in rank and file, very close but flat and never over-lapping one another; and as they are small in individual bulk, a surface of half-an-inch square will accommodate a great many.

The egg is of the usual *Noctua* form, neat and plump in outline, but rather

depressed, measuring about .55 mm. transversely, and about .35 mm. vertically; the under-side quite smooth and shiny, the upper-side with about forty very shallow fine ribs, with irregular intermediate reticulation; about half the ribs come up to the central rosette, which measures about .15 mm. across, and is composed of twelve or thirteen petals round a tiny ring, which, under a strong lens, is seen to be a smaller rosette also; the colour at first is creamy-white, afterwards changing to pale greyish.

The mature pale greenish larva, with the lateral rows of black streaks, as one finds it hiding in the earth at the end of autumn, is a very uninteresting patternless creature; but, by rearing them from the egg, I have had larvæ which, until this last dress, were quite handsome, coloured with rich brown on the back, and with strong pink along the sides.—J. HELLINS, Exeter: February 12th, 1885.

Notes on Eudorea portlandica, Dale, and E. phæoleuca, Zell.—The probable identity of these two insects was, I believe, first suggested by Curtis in 1850 in the "Annals and Magazine of Natural History," Ser. 2, vol. v, p. 115, and the idea having been thus started, I am not aware that it has ever been seriously questioned. It seems, however, highly probable that there is really no connection between the two insects.

Mr. Eustace R. Banks, who resides at Corfe Castle Rectory, has lately been so good as to send me a series of *Eudorea portlandica*, with the suggestion that it is not really distinct from *frequentella*, being merely an unusually white local form, peculiar to the Isle of Portland.

Mr. Banks assures me "that there is every variety, from the light form down to the very dark form, which is apparently indistinguishable from an ordinary *frequentella*; the variation is so gradual and the one species appears to pass so imperceptibly into the other, that in a long series it seems to me impossible to say where the one ends and the other begins."

Mr. Banks adds that "my friend, the Rev. O. R. Digby, has suggested that the Portland *phæoleuca* may not prove identical with the Continental species of that name, from the difference in the direction of the second line."

The *Eudorea phæoleuca* described by Zeller in the 1st volume of the "Linnsæa Entomologica," p. 306, fig. 13, was described from two specimens captured by Herr Kindermann in the Banat (an eastern province of Hungary), and the most essential character given for it is the approximation of the second line to the first on the inner margin, where they are *not half as far apart as they are on the costa*.

This is a character which we certainly do not find in our Isle of Portland insect; the whiteness of the basal portion of the wing, which seems common to both, having probably been the innocent cause of the conjecture that the two insects were the same. Herrich-Schäffer, in his "Schmetterlinge von Europa," iv, p. 49, makes no mention of any other specimens than the two which Zeller had seen from the Banat.

Heinemann had probably seen other specimens, as he says "Alps to Vienna," but he says that it is difficult to distinguish *phæoleuca* from *murana*, and that the form of the wing varies, so that one feels very doubtful whether all that he called *phæoleuca* were really identical with the species described by Zeller under that name.

For the present, therefore, *Eudorea phæoleuca* disappears from our lists, and Dale's *portlandica* is henceforth only a local form of *frequentella*.—H. T. STANTON Mountfield, Lewisham: April 4th, 1885.

Phlaeodes immundana bred from birch and alder catkins.—I have bred two of this species, one from a larva feeding in birch catkins, and the other from a larva in alder catkins. I hasten to make this statement, as unfortunately it is a correction of what was published in the February number (p. 203), inasmuch, as the description there given as the larva of *A. Brockeella* proves instead to apply to that of *Phlaeodes immundana*, and therefore to this species. It will be seen at the early part of the announcement that in February, 1884, I obtained larvæ in catkins of birch, from which I bred *A. Brockeella*, but these larvæ pupated before I had an opportunity of describing them. Last November I obtained larvæ which I considered to be the same, and from which the description was written. I may add that the two insects which emerged to-day spun up one about the 17th of November, and the other about the 26th. I have other pupæ not out yet, which changed as early as 10th November, and others not until the end of January.

Since writing the above five more have emerged, two of them devoid of the white blotch. In all the cases the pupa worked itself out of the cocoon some hours before the moth emerged. There are two rows of minute bristles half round each segment (on the back), and pointing backwards. The tail also is studded with fine points. These enable the pupa to work its way out of the cocoon.—A. BALDING, Wisbech: April 17th, 1885.

Tapinoma gracilescens, Nyl., at Lincoln.—In a cottage in the centre of Lincoln, a short while ago, I noticed a large number of ants belonging to a species that was unknown to me running upon the walls near the fireplace, and over the floor. Mr. E. Saunders tells me that it is *Tapinoma gracilescens*, which has been found at Kew in hothouses, at Exeter, the Crystal Palace, and in the City, but is not really indigenous; they have, however, for a great number of years past thoroughly established themselves in this cottage, for the old woman who inhabits it has never been able to get rid of the plague. She tells me that an old vine used to stand near the cottage or on its site, and considers this to have been the cause of the invasion.—W. W. FOWLER, Lincoln: March 10th, 1885.

Note on Clinocoris griseus and interstinctus.—In the "Wiener ent. Zeitung" for March, is a notice of an article by Dr. O. M. Reuter on the synonyms of some *Hemiptera* published in No. 5 of the "Revue mensuelle d'Entomologie," par W. Dokhtouroff, at St. Petersburg. Among these it is stated that *Clinocoris griseus*, L., and *Cl. interstinctus*, L., are not, as has long been believed, one and the same, but really distinct species; the synonymy being given thus:—

CLINOCORIS GRISEUS, L.

Acanthosoma griseum, var., Flor.

Elasmotethus Fieberi, Jakowl.

CLINOCORIS INTERSTINCTUS, L.

Cimex betulæ, De Geer.

C. alni, Ström.

C. agathinus, Fab.

Acanthosoma griseum, Flor.

Elasmotethus griseus, Fieb.

This notice has a special interest for us, as the *Climocoris* known to us in Britain as *Cl. griseus* is one of the commonest, inhabiting birch trees throughout the summer and autumn, and it may well be that we have also *Cl. interstinctus* mixed with it in collections.

In the "Fauna Suecica," Linné described both species consecutively; No. 926, *Cimex griseus*, No. 927, *C. interstinctus*. The characteristics to be specially noted are—of the former species; "griseous, above sprinkled with deep punctures; scutellum more fuscous towards the base; wings *clouded with fuscous*, dorsum beneath the wings *black*, the margins of the abdomen with white indentations:" of the latter species; "Size, aspect and colour agree with the preceding, except that the hue is paler; scutellum at base and exteriorly more fuscous; wings *white, diaphanous*; dorsum *red* (wherein it evidently differs from the preceding), towards the base a large black spot, posteriorly, especially at the sides of the abdomen, with black transverse lines." The slight differences on which Linné founded his two species have probably induced many subsequent authors to regard them as sexual or only colour-variations of one species occurring during the active stages of life, which, in two broods, extend over several months. Flor, who unites the two species, and was an acute observer, gives no hint of any structural difference. Not having before me Dr. Reuter's article, I cannot say if he has detected any such difference, nor do I know how he has arrived at his conclusion of the reality of Linné's two species; I do not, however, in the least mean to impugn the correctness of his determination.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: April 18th, 1885.

Ceraleptus lividus, Stein, &c., at Chobham.—On the 23rd of February last, while searching along the railway bank in the above locality, in the hopes of meeting with some of the Hymenopterous egg-parasites, I came across a solitary root of meadow fescue grass (*F. pratensis*), which I at once cut and transferred to a sheet of paper; the result being not only the capture of several good species of *Coleoptera*, but what was to me more pleasing, that out tumbled no less than eight specimens of *Ceraleptus lividus*, Stein. This rare Hemipteron has not, I believe, before been met with so far inland in this country, and, in fact, has been looked upon as a coast insect. Messrs. Douglas and Scott, and also Mr. Saunders in his Synopsis, give the localities of Deal and neighbourhood on the Sandhills, while my friend, Mr. E. P. Collett, met with it in 1882 on the Sandhills at Camber. The extreme rarity of this insect led me to think it might not be uninteresting to record its capture from the above locality; the same tuft of grass produced me no less than seven species of *Pezomachus*, viz., *Pezomachus rufulus*, Först., *tener*, Gr., *timidus*, Först., *Neesii*, Gr., *agilis*, Först., *insolens*, Gr., *geochares*, Först., and one specimen of *Aptesis nigrocincta*, Panz.—T. R. BILLUPS, 20, Swiss Villas, Coplestone Road, Peckham, S.E.: April, 1885.

Coleoptera at Llangollen.—On Friday last, April 3rd, I had a pleasant day's collecting among the hills surrounding this charming Welsh village, being accompanied by another entomological enthusiast, Dr. J. W. Ellis. Before ascending the

heights we spent half an hour at one of the little streams which run down the mountains into the Dee, and here, under pebbles, we took *Bembidium decorum*, *B. tibiale*, *B. atrocaruleum*, and *B. prasinum*.

A walk of about an hour brought us to the foot of Moel-y-Gamelin, on the slopes of which we worked for some time. Insects were, however, very scarce, the only species worth noting being *Carabus arvensis*, *C. catenulatus*, *Pterostichus vitreus*, and a single specimen of *Miscodera arctica*, which fell to my lot. As the latter species was among our desiderata, we searched carefully for more, but without success. A critical examination of every *Pterostichus madidus* and *Nebria brevicollis* failed to give us *P. athiops* or *N. Gyllenhalii*, although I think it is a likely spot for both.

These high moors are frequently mentioned in Dawson's "Geodephaga Britannica," and I think they would well repay systematic working at all times of the year. Many of our rare *Aphodii* no doubt occur there, and, in fact, I know that *A. Zenkeri* was taken there in September, 1883.—R. WILDING, 40, Downing Street, Liverpool: April 9th, 1885.

ENTOMOLOGICAL SOCIETY OF LONDON.—April 1st, 1885: B. McLAUCHLAN, Esq., F.R.S., President, in the Chair.

Messrs. Ernest Sable, of Grove Road, Clapham Park, and H. C. Dent, of 20, Thurlow Square, were elected Members.

Mr. R. M. Christy (present as a visitor) exhibited a drawing of the larva of the local form of *Platysamia Columbia*, known as *Nokomis*: he had found the larva in Canada feeding on *Elaeagnus argentea*, the peculiar silvery appearance of which was strikingly in accord with the colour of the larva, which latter was probably protected thereby. He also showed faded leaves of *Betula glandulosa*, and said he had observed *Papilio Asterias* settle on similar patches of leaves, apparently mistaking them for flowers on account of the bright colouring. Mr. Weir said he had observed white butterflies settle on patches of variegated leaves in his own garden, and he alluded to the well-known case of bees coming to artificial flowers on a lady's bonnet.

Mr. Billups exhibited two species of *Pezomachus* new to Britain, viz., *P. immaturus* and *vulnerans*, taken at Headley Lane in January, and remarked that on the same day he took thirteen species of the genus.

Mr. E. A. Fitch exhibited a rather large moth, apparently belonging to the *Crambidae*, found at rest on a wall in Dr. Wallace's garden in Colchester, having probably been imported in plants. It was not contained in the National Collection, and was perhaps undescribed.

Mr. Dunning called attention to a paper by Mr. F. G. Heathcote, published in the Transactions of the Cambridge Philosophical Society, on a curious pouch-like organ at the base of the mandibles in *Scutigera* (*Myriopoda*), the function of which was considered to be auditory.

Reviews.

HISTOIRE NATURELLE DE LA FRANCE:—HÉMIPTÈRES: par L. FAIRMAIRE, Ex-President de la Société Entomologique de France. Paris: E. Deyrolle, 1884, 8vo, 206-pp., 9 plates.

Under the general title "Musée scolaire Deyrolle," there is now in course of publication a series of treatises on the Natural History of France, the term "Natural History" being used in its widest sense, so as to include Zoology, Botany, Geology, Palæontology, and Mineralogy. The series will comprise 23 volumes, of which 6 are devoted to Insects, and of these 3 (*Coleoptera*, *Lepidoptera*, *Hemiptera*) have already appeared. The purpose of the series is explained in the prospectus:—"It is not enough to say to founders that they should form a school-museum, instruct pupils to distinguish useful or hurtful animals, or form collections of plants or minerals; they must furnish the learners with works which will enable them to determine with ease and certainty the large quantity of such objects found in France. In order to accomplish this end, acknowledged *Savans* have been very willing each to treat a class or order in such a manner as to render the study of the natural sciences accessible to all, and to diminish the inherent difficulties of the science, which includes the whole of Nature." Without any disparagement to the many excellent works already existing in this country, we should yet like to see a series of treatises on this model in English, not only in general use in schools, as in France, but also for the instruction of children of larger growth, who are, as a rule, sadly in want of such knowledge, of which we had a fine instance lately (*vide* p. 63, *ante*). Then also we might hope to enlist some more capable recruits into the ranks of the volunteers, if not into the regular line of the army of scientific research.

The volume on *Hemiptera* is more than elementary, in conformity with the scope of the design of the series, for it not only sets forth the principles of classification, but also the characters of genera and species in concise yet sufficient form, the typical, and often all the species of a genus being described. As is fitting in such a work as this there is no novelty, except that, instead of two, three primary divisions—Hétéroptères, Homoptères, and Sternorhynques are adopted, and the limits of genera are advantageously enlarged; but we are not disposed to favour the total omission of the names of previous workers—even the names of the authors of specific descriptions—for thus, as far as this volume is concerned, the learner would necessarily believe that the whole was the original work of the author. This, perhaps, has been intentional, so as to divest the work in the eyes of the young of the deterrent appearance of great knowledge beyond their reach, and yet, as conveying an untrue impression, it is a mistake. The figures on the plates deserve special commendation for their accuracy and artistic finish. Only a very extensive sale can compensate for the production of such a volume as this at the price.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. Second series; part xiii. Boston: Houghton, Mifflin, & Co. London: Trübner & Co. 1885.

In the number of this Magazine for August, 1868 (vol. v, p. 79), we crit

favourably the first part, of the *first* series, of Mr. Edwards' magnificent work. We have now to congratulate him, and entomologists generally, on the completion of the *second* series. Fully seventeen years is a large slice of the working time in a man's life. But with characteristic singleness of purpose, Mr. Edwards announces the commencement of a *third* series in a few months, for which he has in hand abundant materials. Naturally there is much yet to be done. In his list of North American Butterflies (North of Mexico) in the part now before us, 612 species are recognised (irrespective of varieties, &c.), and of only a tithe of these are the life-histories described.

Obituary.

Prof. Carl Theodor Ernst von Siebold died at Munich on April 6th, aged 81 years. He was born at Würzburg on February 16th, 1804, and was cousin to the well-known Japanese traveller and philologist of the same name. Educated for the medical profession, he practised for some time at Königsberg, until he obtained an appointment at Dantzic in 1835. Subsequently he became professor of zoology and comparative anatomy at Erlangen, Friburg, Breslau, and Munich successively, his appointment at the latter place dating from 1853. Von Siebold published a little systematic entomological work; but it was in the comparative anatomy, physiology, and biology of insects (and also of other invertebrates) that he made his great reputation, which was scarcely second to any in Europe, and the results of his lectures and publications largely influenced the studies and thoughts of enquirers into these special branches for many years. It would be impossible here to glance at even a few of his most important memoirs. His text-book on the comparative anatomy of invertebrates, published in 1848, still maintains its reputation. In 1856 appeared what was perhaps his most remarkable work, "*Wahre Parthenogenesis bei Schmetterlingen und Bienen*", of which an English translation was made the following year by Mr. W. S. Dallas. The statements therein were at first received with much incredulity, and even some derision: but who now doubts their truth? Parthenogenesis continued one of his favourite studies, and only a year or two before his death he published an important memoir on the subject as observed in *Tenthredinida*. Von Siebold will equally be remembered, and his memory respected, as an editor. In 1849, he (in conjunction with Kölliker) founded the "*Zeitschrift für wissenschaftliche Zoologie*," which continues the most prominent natural history periodical in Germany. Almost every leading Academy or Society enrolled his name amongst its Honorary Members. In this country he was elected one of the Foreign Members of the Royal Society and of the Linnean Society so long back as 1858, and one of the Honorary Members of the Entomological Society in 1870. Viewed in connection with the most modern school of naturalists, Von Siebold could scarcely be termed a theorist, yet several of his discoveries from actual patient observation were more startling than the speculations of the present day, which are founded too often on a basis of fact with a huge superstructure of imagination.

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ERRATA.

- Page 168, line 8 from bottom, for "*Lycæna*," read "*Liparis*."
 „ 198, „ 3 „ „ „ „ "*County*," „ "*Country*."
 „ „ „ 8 „ „ „ „ "*secundum medianas*," read "*secundam medianas*."
 „ 221, „ 20 „ „ „ „ "*Stephens*," read "*Stevens*."

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